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# 亚洲大陆的金星蕨科的新分类系統

# A RECLASSIFICATION OF THE FAMILY THELYPTERIDACEAE FROM THE MAINLAND OF ASIA

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## 一、历史的簡短回顧

金星蕨科（Thelypteridaceae）是蕨类植物眞蕨亚綱中的一个世界性的大科，它包括大約25个属和六百多种植物，分布于世界各地，尤以泛热带地区作为其分布中心，中国現知有三百余种，为长江以南的低海拔山地最常見的植物。长期以来，它的分类系統問題一直沒有得到合理的解决。在編写中国植物志的过程中，作者对亚洲大陆及其邻近地区所产的这羣植物的分类学进行了較深入的研究，并提出了一个新的分类系統，它将詳見于中国植物志第四卷，不拟在此作过多的重复。本文仅就这个系統的研究結果，提出一个綱領性的总結，以便在較短的篇幅內，可以窺見其全貌。

早在1936年，作者曾对亚洲大陆的鱗毛蕨属（*Dryopteris*）的分类学进行过研究，提出了专著[1)]，在这里广义的金星蕨属（*Thelypteris*）和其它一些相近的属第一次从眞正的鱗毛蕨属分立出来，并初步确立了各属的概念。1940年作者又对过去一直是包罗万象的多系統的水龙骨科（Polypodiaceae）进行了研究，发表了它的自然分类系統[2)]一文，并在这里第一次提出了金星蕨科这个新科的建立，以区别于三叉蕨科（Aspidiaceae）的眞正的鱗毛蕨属（*Dryopteris*）。从此以后，大多数的蕨类学家[3—8)]基本上都采用了这个分类法，不过也有个别的学者采取了中間路綫的做法，例如，美国蕨类学家 E. B. Copeland 在他1947年出版的“眞蕨植物属志”（Genera Filicum）一书中，他在部分地采用了作者的分类系統的同时，却不恰当地以假鱗毛蕨属（*Lastrea*）这个属来代替了广义的金星蕨属（*Thelypteris*），并将这个属仍归入三叉蕨科，而不承認金星蕨科为一个独立的科。但他的这种做法不但沒有得到蕨类学家的支持，反而受到了各方面的批評，因为他的所謂三叉蕨科，正象他的所謂凤尾蕨科（Pteridaceae）一样，按照蕨类植物的现代分类学观点，实际上是由許多不同的科拼凑而成的一个非常异质的羣，缺乏系統分类的正确概念。近年来，蕨类植物細胞学的研究已經有了較大进展，例如英国的 Manton[9—10)] 和 Sledge 所提出的关于金星蕨科和三叉蕨科的細胞分类学的研究成果，基本上証实了作者在1940年关于这羣植物的分类学观点

1）所注号碼为本文引証的文献，依次見于本文的外文討論摘要下的注脚，这里不拟重复。

是正确的，而 E. B. Copeland 把金星蕨属和其它一些相近的属归入三叉蕨科的做法已經被証明是缺乏理論根据的。

当 1940 年把金星蕨科建立为一个新科时，作者曾提出了 12 个属作为它的組成属，其中 8 个属产于亚洲大陆（有些属为世界共有的），即金星蕨属（*Thelypteris* Schmidel），茯蕨属（*Leptogramma* J. Sm.），肿足蕨属（*Hypodematium* Kunzé），毛蕨属（*Cyclosorus* Link），新月蕨属（*Abacopteris* Fée），星毛蕨属（*Goniopteris* Presl＝*Ampelopteris* Kunze, pro parte），溪边蕨属（*Stegnogramma* Bl.）和圣蕨属（*Dictyocline* Moore）。今日，虽然大多数的蕨类学者接受了这些属，但也有极少数的植物学家在某些属的概念上，仍持有某种程度不同的观点，例如，美国 Morton[11]，在承認广义的金星蕨属（*Thelypteris*）为不同于鳞毛蕨属（*Dryopteris*）的一个独立的属的前提下，对这个属的概念采取較为广义的观点，把毛蕨属、新月蕨属和其它一些属都归入了金星蕨属。可以指出，Morton 在处理这一羣高度同形异源的植物时，他过分強調了叶脉型作为唯一的分属的根据，而却忽視了在分类学上有同等重要意义的其它許多特征，例如，裂片間的缺刻有无 1 条狹长的透明膜，叶下面有无橙色光亮的球形腺体，沿叶軸两側在羽片基部着生处有无瘤状突起的气囊体，孢子囊羣是否有盖等等，却都被他忽視了。实际上，一个新分类羣（譬如說，一个属）的建立，不会仅仅根据一个单一的性状，而总是根据許多性状的綜合做出决定的。可以順便指出，同 Morton 的观点完全相反，日本伊藤洋（H. Ito）[3] 曾对这羣植物进行了較为細致的研究，他不仅承認了作者在 1936 年所規定的金星蕨属这个属的解說，而且还进一步从作者在这个属下所建立的一些羣（Groups）分立成为一些不同的組（Sections），并給以分类学的正式命名。最近日本岩槻邦男[12]（K. Iwatsuki）又对这羣植物进行了更深入的研究之后，表示了伊藤洋的某些分类組是可以考虑提升为属一級的分类羣的意見。我認为他的这个見解是正确的，虽然他并沒有应用細胞学的材料来支持他的純形态学的論点。

应該指出，作者在 1936 年所定的金星蕨属的概念似嫌过于广泛，它实际上仍然是包括几个不同属的一个复合体，但当时限于对于它的不同的組成部分的异同之点还提不出足够的論証，所以暫将这个广义的属分为 10 个"羣"来处理。今天看来，这 10 个"羣"中的許多"羣"实质上是代表着很自然的属一級的分类羣的，例如，从孢子囊羣无盖的这一羣植物中，作者在专著中曾分成了 4 个"羣"（"羣" 4—7），每一"羣"分别以一种植物作为代表，即 *Thelypteris aurita* (Hook.), *T. phegopteris* (Linn.), *T. himalayensis*, 和 *T. erubescens* (Wall.)。現在从形态学和細胞学方面所提出的新的証据看来，这些"羣"也同样地可以考虑被提升为属一級的分类羣的。

近十多年来，不仅随着在蕨类植物分类学方面的一般知識的积累，而且特别由于 Manton 和她的同事們在蕨类植物細胞学方面提出了一系列的新发現的新情况下，我們可以說，現在比之过去任何时期有条件能更进一步地試图对金星蕨这羣高度同形异源的植物提出一个新的分类系統——这就是本文的目的；不过目前为了实际需要（即結合中国植物志的編写），本文主要是限于亚洲大陆所产的这羣植物的分类系統的訂正。

在 1940 年发表的"水龙骨科的自然分类系統"一文中，作者曾把金星蕨科分为 3 个族，即金星蕨族 Thelypterideae、星毛蕨族 Goniopterideae 和圣蕨族 Dictyoclineae。这个系統，現在看来，如果稍加修改补充，还是适用的，不过其內容比过去更加充实了，即从过去

的 8 个属，已增加到今天的 18 个属了。

最后，应該指出，本文所根据的材料的来源虽然主要是亚洲大陆，但也相当广泛地涉及到周围的邻近地区，包括南洋羣島、菲律宾、日本、朝鮮、欧、亚、美地区和非洲。因此，这里所提出的系統对亚洲大陆以外的其它地区也有一定意义的。

## 二、金星蕨科的分类系統总覽

I. **金星蕨族** Tribe **Thelyptérideae** Ching, Sunyatsenia V (1940) 238。

叶脉分离，末回裂片基部邻近的一对叶脉伸达缺刻以上的叶边，缺刻不具軟骨質；叶为二回羽状深裂或二至三回羽状；孢子囊羣圓形(罕为长形)，有盖或无盖。本族共有 10 个属，根据囊羣盖的有无，又可以分为以下 2 个亚族。

**i. 金星蕨亚族** Subtribe **Thelypteridinae** Ching。孢子囊羣圓形，有盖。有以下 5 个属：

1. **沼泽蕨属** ***Thelypteris*** Schmidel，世界属。
2. **假鳞毛蕨属** ***Lastrea*** Bory，产欧、亚、美温带地区。
3. **金星蕨属** ***Parathelypteris*** (H. Ito) Ching，世界属。
4. **凸轴蕨属** ***Metathelypteris*** (H. Ito) Ching，产热带亚洲。
5. **肿足蕨属** ***Hypodematium*** Kunze，产旧大陆，以中国为分布中心。

**ii. 卵果蕨亚族** Subtribe **Phegopteridinae** Ching。孢子囊羣圓形、长圓形或长形，无盖。有以下 5 个属：

6. **針毛蕨属** ***Macrothelypteris*** (H. Ito) Ching，产热带亚洲。
7. **卵果蕨属** ***Phegopteris*** Fée 产欧、亚、美温带地区。
8. **紫柄蕨属** ***Pseudophegopteris*** Ching，产亚洲热带和亚热带。
9. **鈎毛蕨属** ***Cyclogramma*** Tagawa，产亚洲大陆。
10. **茯蕨属** ***Leptogramma*** J. Sm.，产热带和亚热带亚洲。

II. **毛蕨族** Tribe **Goniopterideae** Ching, Sunyatsenia V (1940) 239。

叶脉交結成星毛蕨型或新月蕨型，即裂片基部邻近一对或下部 1—4 (5) 对或所有各对叶脉(仅近叶边的 1—2 对分离)彼此交結，并有 1 条外行小脉出自交結点或通达缺刻内的一条縱行透明狹膜(如在毛蕨属 *Cyclosorus*)，或和其上方的許多对的交結脉相联合，但缺刻内不具透明膜(如新月蕨属 *Abacopteris*)，或者基部一对叶脉在有軟骨質的缺刻内多少鑲合，但从不眞正結合，也无外行小脉(如中脉蕨属 *Mesoneuron* 和假毛蕨属 *Pseudocyclosorus*)，或者仅基部上側一脉斜达有軟骨質的缺刻，而其基部下側一条叶脉总是通达缺刻以上的叶边；叶为二回羽状深裂或为奇数一回羽状；孢子囊羣圓形或近圓形，有盖或无盖(如假毛蕨属 *Pseudocyclosorus*)。

本族共有 7 属，根据叶脉型又可分为 4 个亚族如下：

**i. 假毛蕨亚族** Subtribe **Pseudocyclosorinae** Ching。裂片基部邻近一对叶脉或者仅基部上側一条斜行脉通达有軟骨質的缺刻；叶为有限生长，二回羽状深裂；孢子囊羣圓形，有盖或无盖。有 3 个属如下：

11. **方稈蕨属** ***Glaphyropteridopsis*** Ching，产亚洲大陆。

12. **假毛蕨属** ***Pseudocyclosorus*** Ching，产热带亚洲及美洲。

13. **中脉蕨属** ***Mesoneuron*** Ching，产热带亚洲。

**ii. 毛蕨亚族** Subtribe **Cyclosorinae** Ching。裂片基部邻近一对或1—3(-4)对叶脉彼此交結，并有一条出自交結点的外行小脉通达裂片缺刻間的一条纵向透明的狭长膜，或无透明膜；叶为有限生长，二回羽状深裂或浅裂，羽片綫状或狭披針形；孢子囊羣圓形，有盖，或长形而无盖。仅有2属如下：

14. **毛蕨属** ***Cyclosorus*** Link，泛热带或亚热带属。

15. **溪边蕨属** ***Stegnogramma*** Bl.，产热带亚洲，以中国为分布中心。

**iii. 星毛蕨亚族** Subtribe **Goniopteridinae** Ching。叶脉为星毛蕨型，缺刻間不具透明的狭长膜，也不具軟骨質；叶为无限生长；羽片胎生(卽自腋芽內生出新叶)；孢子囊羣近圓形，无盖。仅有1属如下(美洲另有1个相近的属 *Goniopteris* Presl.)：

16. **星毛蕨属** ***Ampelopteris*** Kunze，产旧世界各洲。

**iv. 新月蕨亚族** Subtribe **Menisciinae** Ching。叶脉为新月蕨型，卽所有叶脉(仅近叶边1—2条分离)在側脉間都彼此联結成2行斜方形网眼，缺刻內不具透明的狭长膜，也不具軟骨質；叶为有限生长，奇数羽状，羽片寬大，全緣或有时略有波状粗齿；孢子囊羣圓形，无盖或有不发育的盖，有1属如下(美洲另有1个相近的属 *Meniscium* Sw.)：

17. **新月蕨属** ***Abacopteris*** Fée, emend. Ching，产热带亚洲。

III. **圣蕨族** Tribe **Dictyoclineae** Ching, Sunyatsenia V (1940) 240。

叶脉全部为网状，网眼近六角形，不具或多少具一条单一或分叉的內藏小脉；孢子囊不聚生成羣，而沿叶脉散生成网状，无盖；叶为有限生长，并为单叶或羽裂，或为一回羽状，但頂部羽裂。仅有1属如下：

18. **圣蕨属** ***Dictyocline*** Moore，亚洲大陆特有属，以中国为分布中心。

以上所列各属的形态学和中国所产的种类以及它們之間的亲緣关系，将在中国植物志第四卷詳述；但为了突出各分类羣的主要特点，根据上面的系統，在本文附加一个分属检索表也許是有必要的。至于有关各属的代表性的种类，均列举于外文摘要部分，以免过多的重复。

## 三、分属检索表

1(24, 31) 叶脉分离(**金星蕨族 Thelypterideae**)。

2(13) 孢子囊羣无盖。

3(8) 孢子囊羣圓形。

4(7) 叶片为狭长圓形或披針形，二回羽状深裂；叶脉单一，达到叶边，遍体被单細胞的短毛。

5(6) 羽片基部下面有疣状突起的褐色气囊体；叶干后多少呈褐色；裂片的缺刻內无軟骨質的駝峯……………………………………………………**9. 鈎毛蕨属** ***Cyclogramma*** Tagawa

6(5) 羽片基部下面无疣状突起的褐色气囊体；叶干后为綠色；裂片間的缺刻內有軟骨質的駝峯……………………………………………………**11. 方稈蕨属** ***Glaphylopteridopsis*** Ching

7(4) 叶片为卵状三角形，三回羽状；叶脉分叉，不达叶边，遍体被多細胞的长毛……………………………………………………**6. 針毛蕨属** ***Macrothelypteris*** Ching

8(3) 孢子囊羣为长形或长圓形。

9(10)　孢子囊羣为长形，叶脉单一，裂片全緣……………………10.茯蕨属 *Leptogramma* J. Sm.

10(9)　孢子囊羣为长圓形或近圓形；叶脉多少分叉；裂片或小羽片照例羽裂。

11(12)　植株形体小，叶柄为淡禾稈色，无光泽；叶片为卵状三角形或狹披針形；側生羽片基部沿叶軸两側合生下延，叶軸和羽軸下面被很多披針形的鱗片，边緣有刚毛；叶脉达于叶边……………………………………7.卵果蕨属 *Phegopteris* Fée

12(11)　植株通常高大，叶柄为紅棕色或棕禾稈色，有光泽；叶片为长圓形，罕为闊披針形，側生羽片彼此分离，基部也不沿叶軸两側下延，叶軸和羽軸下面不具同样的鱗片；叶脉不达于叶边……………………………………8.紫柄蕨属 *Pseudophegopteris* Ching

13(2)　孢子囊羣有盖。

14(15)　叶柄基部膨大成梭形，并隐沒于一大簇垫状的紅棕色的大而密的鱗片內……………………………………5.肿足蕨属 *Hypodematium* Kunze

15(14)　叶柄基部不膨大，也无一簇紅棕色鱗片复盖。

16(17)　沼泽生植物；叶脉二叉……………………1.沼泽蕨属 *Thelypteris* Schmidel

17(16)　中生植物；叶脉通常单一(偶有二叉)。

18(19)　羽軸上面光滑无毛(或偶有早落的疏毛)，叶柄下部有很多鱗片……………………………………2.假鱗毛蕨属 *Lastrea* Bory

19(18)　羽軸上面密生宿存的針状毛，叶柄下部少有鱗片疏生。

20(21)　羽軸上面圓形隆起；叶脉先端不达叶边；囊羣盖小，淡綠色……………………………………4.凸軸蕨属 *Metathelypteris* Ching

21(20)　羽軸上面凹陷成一条纵沟；叶脉先端到达叶边；囊羣盖大，棕色。

22(23)　羽片基部下面不具疣状气囊体，裂片基部一对叶脉伸达不具軟骨质的缺刻以上的叶边；叶为草质，下面往往有球形的橙色腺体。……………………3.金星蕨属 *Parathelypteris* Ching

23(22)　羽片基部下面有一疣状突起的褐色气囊体，裂片基部一对叶脉或仅上側一脉伸达有軟骨质的缺刻；叶为紙质或革质，下面无球形的橙色腺体…12.假毛蕨属 *Pseudocyclosorus* Ching

24(1, 31)　叶脉联結成星毛蕨型或新月蕨型；孢子囊羣圓形或长形(星毛蕨族 **Goniopterideae**)

25(26)　孢子囊羣有盖；叶脉为星毛蕨型(以裂片基部一对或下部 1—3 [-4]对的頂端交結，并有外行小脉)，羽片深羽裂，裂片間的缺刻下有一条棕色透明薄膜，下面往往有圓球形或偶为棒形的橙色腺体……………………………………13.毛蕨属 *Cyclosorus* Link

26(25)　孢子囊羣无盖(或有不发育的盖)，羽片浅羽裂或近全緣，缺刻內无棕色透明薄膜，叶下面无腺体。

27(28)　叶脉为新月蕨型，即所有叶脉(近叶边的少数除外)都联結成方形或斜方形网眼；羽片大，闊披針形，孢子囊羣幼时为圓形，成熟时往往成双汇合成新月形……………………………………16.新月蕨属 *Abacopteris* Fée

28(27)　叶脉为星毛蕨型；羽片小，狹披針形，孢子囊羣为长形。

29(30)　植株为无限生长，即从腋間的芽胞內生出新叶片；部分的毛为星芒形分叉，有柄；孢子囊羣圓形或长圓形，孢子囊无毛……………………15.星毛蕨属 *Ampelopteris* Kunze

30(29)　植株为有限生长，毛为单一；孢子囊羣长形，孢子囊有刚毛……………………………………14.溪边蕨属 *Stegnogramma* Bl.

31(1, 24)　叶脉为网型；孢子囊不成羣，而沿网形叶脉散生(圣蕨族 **Dictyoclineae**)……………………………………17.圣蕨属 *Dictyocline* Moore

Since the publication in 1936—38 of my revision[1)] of "*Dryopteris*" of C. Christensen's Index Filicum and again in 1940 of my another paper on the classification[2)] of the old comprehensive family "*Polypodiaceae*" of authors, where I proposed for the first time, among others, a new family of *Thelypteridaceae* as distinct from *Dryopteris* (sensu stricto) of the family *Aspidiaceae*, fern students at large have agreed with me that *Thelypteris palustris* and its allies should be segregated from *Dryopteris filix-mas* and its allies and that for phylogenetic reasons a family of its own is certainly desirable. My treatment of this group of thelypteroid ferns as a whole has since been generally adopted by the leading pteridologists[3—8)] the world over. While following me in part in his *Genera Filicum,* Copeland, on the other hand, dogmatically insisted upon using *Aspidiaceae* and *Lastrea* instead of *Thelypteridaceae* and *Thelypteris* Schmidel respectively, but, as has been already repeatedly criticised by many leading pteridologists in recent years, Copeland's family of "*Aspidiaceae*", like his "*Pteridaceae*" is a terrible mixture of a number of distinct families according to the modern conception of the classification of ferns, and, strange to say, even Copeland himself also admitted that it is impossible to define his "family" in words. Recent cytological findings by Manton and Sledge[9—10)] have lent substantial additional evidence in favour of the stand I put up in 1940 as a whole.

Of the genera of the family *Thelypteridaceae* of the world, as was tentatively defined in my paper[2)] in 1940, I then credited eight to the mainland of Asia, namely, *Thelypteris* Schmidel, *Leptogramma* J. Sm., *Hypodematium* Kunze, *Cyclosorus* Link, *Abasopteris* Fée, *Goniopteris* Presl (=*Ampelopteris* Kunze, as far as plants from Asia are concerned), *Stegnogramma* Bl. and *Dictyocline* Moore, and these were referred to three tribes: *Thelypterideae*, *Goniopterideae* and *Dictyoclineae*. While most of the present-day pteridologists have accepted these genera I had proposed, there are a few taking a somewhat different stand, as, for example, Morton[11)] who seems inclined to consider the genus *Thelypteris* in a more liberal way by including in it also *Cyclosorus* Link, *Abacopteris* Fée and other taxa of the family. However, it may be pointed out that,

1) A revision of the Chinense and Sikkim-Himalayan *Dryopteris* with reference to some species from the neighbouring regions, Bull. Fan Mem. Inst. Biol. VI (1936) 237—252; *ibid.* Bot. Ser. VIII (1938) 157—268; 275—507.

2) On natural classification of the family "Polypodiaceae," Sunyatsenia V (1940) 201—268.

3) H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 123.

4) H. Ito, Fil. Jap. Illustr. (1944) tt. 330—339.

5) Tardieu-Blot et C. Christensen in Fl. Gén. Indo-Chine VII, ii (1941) 355.

6) E. B. Copeland, Genera Filicum (1947) 135.

7) R. E. Holttum, Ferns of Malaya (1954) 236.

8) Tardieu-Blot, Fl. Madagas. I (1958) 270.

9) I. Manton, Problems of Cytology and Evolution in the Pteridophyta (1950).

10) Manton and Sledge, Observations on Cytology and Taxonomy of Pteridophyte Flora of Ceylon, Trans. Roy. Soc. London, Series B, Biol. Sci. no. 654, vol. 238 (1954) 133.

11) American Fern Journal XLVIII (1958) 140; ibidem XLIX (1949) 113.

while dealing with this highly homoplastic group of ferns, Morton lays an undue emphasis upon the venation as the only criterion for generic separation and neglects among others a number of characters of equally taxonomical importance, such as the presence or absence of the sinus-membrane between two adjacent lobes, of the bright-colored sessile glands on the under side of the leaves, of the characteristic aerophores along the rachis at the insertion of pinnae underneath, of the indusium, etc. As a matter of fact, an experienced systematist to-day will never establish a taxon, say, a genus, on the basis of a single character alone, but always on a sum, or a combination of characters. Incidentally, it may be pointed out that in dealing with the group of ferns in question, H. Ito[3] has done a far more serious work by not only accepting *Thelypheris* as defined by me in 1940, but also by further recognizing that it consists of a number of sections, some of which according to Iwatsuki,[12] I think properly, are susceptible to generic status. In fact, *Thelypteris* of my monograph was construed too broadly, being a mixture of a number of distinct genera, but because the affinities and distinctions of some of which still remain not very clear, it was then tentatively divided into ten "groups", most of which, as I see now, represent natural genera, as, for example, of the group of the exindusiate ferns, generally known as "*Phegopteris*" of authors. I sorted out four "groups" (namely, groups 4—7), each represented by *Thelypteris aurita* (Hook.), *T. phegopteris* (Linn.), *T. himalayensis* (C. Chr.) and *T. erubescens* (Wall.), all of which are likewise susceptible to generic rank, because they differ from each other in a number of characters, besides the exindusiate sori.

With the recent increase in our knowledge in the systematics of ferns in general and in the noteworthy cytological findings by Manton and her school in particular, we are now in a far better position than ever before to attempt reclassifying this seemingly complicated but natural group of thelypteroid ferns, and such is the aim of the present paper, for which I confine myself at present mainly to the species from the mainland of Asia.

The family *Thelypteridaceae* was divided by me[13] into the following three tribes and this scheme of classification now still holds by only adding thereto a few improvements, as outlined below:

Tribe I. **Thelypterideae** Ching, Sunyatsenia V (1940) 238. Veins free, of which the basal pair of adjacent groups runs to the free leaf-margin high above the non-callous sinus; sori round or oblong, indusiate or not indusiate; genera 1—10.

Type of the tribe: **Thelypteris** Schmidel

Subtribe i. **Thelypteridinae** Ching, subtrib. nov. Soris globosis, indusiatis; genera 1—5.

12) Acta Phytotax. et Geobot. XVIII (1960) 155.
13) Sunyatsenia V (1940) 238.

Type of the subtribe: **Thelypteris** Schmidel

Subtribe ii. **Phegopteridinae** Ching, subtrib. nov. Soris exindusiatis, globosis vel oblongis aut elongatis; genera 6—10.

Type of the subtribe: **Phegopteris** Fée

Tribe II. **Goniopterideae** Ching, Sunyatsenia V (1940) 239. Veins either of goniopteroid or of meniscioid type, i.e., 1), the basal pair or often 1—3 (—4) lower pairs join each other with an excurrent veinlet running outwardly to a transluscent elongate sinus-membrane closing the base of sinus (as in *Cyclosorus*); 2), all veins (except a few distal ones near the leaf-margin) of adjacent groups join each other with an excurrent veinlet often united to many vein-pairs next above, but without a transluscent sinus-membrane (as in *Abacopteris*); 3), the basal pair of veins of the adjacent groups more or less meet (but never join) each other in the callous sinus (as in *Pseudocyclosorus* and *Mesoneuron*); and 4), often only the anterior basal vein runs obliquely to the callous sinus, while the posterior basal vein always runs to the free leaf-margin above the sinus (as in *Pseudocyclosorus*); sori globose, indusiate or exindusiate; genera 11—17.

Type of the tribe: **Goniopteris** Presl.

Subtribe i. **Pseudocyclosorinae** Ching, subtrib. nov. Venis infimo jugo vel basali anteriore tantum sinum callosum attingentibus; genera 11—13.

Subtribe ii. **Cyclosorinae** Ching, subtrib. nov. Venis inferioribus 1—3(—4) jugis junctis, venula excurrenti saepissime in membranam transluscentem elongatam inter sinum terminanti; fronde bipinnatisecta, non-prolifera; soris indusiatis; genus 14—15.

Type of the subtribe: **Cyclosorus** Link.

Subtribe iii. **Goniopteridinae** Ching, subtrib. nov. Venatio goniopteroidis, membrana transluscenti inter sinum nulla; fronde prolifera, soris exindusiatis; genus 16.

Type of the subtribe: **Goniopteris** Presl.

Subtribe iv. **Menisciinae** Ching, subtrib. nov. Venatio meniscioidis, membrana transluscenti inter sinum nulla; fronde impari-pinnata, pinnis pauci-jugis, latis, integris vel crenato-serratis, soris exindusiatis vel interdum indusiis rudimentalibus et fugaceis; genus 17.

Type of the subtribe: **Meniscium** Sw.

Tribe III. **Dictyoclineae** Ching, Sunyatsenia V (1940) 240. Veins reticulate with more or less hexagonal areolae without or with a simple or forked included veinlet; sori exindusiate and indefinite, following the course of reticulate veins; genus 18.

Type of the tribe: **Dictyocline** Moore

In the following pages, I only briefly delimit the distinctions of each genus, citing a few representative species as illustrations. For more detailed information reference may be made to the *Flora Reipublicae Popularis Sinicae* vol. IV.

## 四、金星蕨科的系統分类

### 1. 沼泽蕨属 (*Thelypteris* Schmidel)

中小形的沼泽或草甸植物。根状茎长而横走，黑色，光滑，頂端略被卵状披針形鱗片。叶远生或近生，有柄，叶柄禾稈色，光滑，基部近黑色；叶片长圓披針形，頂端短漸尖，基部不变狹，或有时略变狹，二回羽裂；羽片多数（15 对上下），披針形，近平展，有短柄，頂端急尖或短漸尖，基部平截，对称，羽軸上面有 1 条纵沟，下面隆起，深羽裂；裂片卵状三角形或长圓形，全緣（有时呈波状），有 1 短尖头，叶边变薄，尤以能育裂片为甚。叶脉在裂片上为羽状，少数（約 4—6 对），頗开展，自基部以上二叉（有时二叉分枝），小脉达于叶边。叶厚草質或近革質，两面幼时略被柔毛，老則几变光滑，不具腺体。孢子囊羣圓形，生小脉上，在主脉两側各成 1 行，位于叶边和主脉之間，有盖，盖为圓腎形，淡綠色，膜質，不久脫落，能育裂片的叶边往往反折，多少复盖孢子囊羣，孢子两面型，腎形，表面有疣状突起。

按属的狹意概念，本属約有 3—4 种，广布于北半球温带，向南經亚洲大陆西南部（我国云南及印度南部），达于热带非洲（阿尔及利亚及大西洋沿岸）和新西兰南部，生沼泽或草甸，中国有 2 种。

属的模式：**沼泽蕨 *Thelypteris palustris*** (Salib.) Schott.

本属过去的定义过于广泛，包括形体大致相同的 300 多种，但近来关于生态、形态、細胞和分类学的研究証明了有許多不同的系統发育路綫，应分成不同的属較为合理。这样，本属的含义大为縮小，现仅有 3—4 种。

### Tribe I. **Thelypterideae** Ching

#### Subtribe i. **Thelypteridinae** Ching

#### 1. ***Thelypteris*** Schmidel

As construed here, the generic sense of *Thelypteris* may well be confined only to the following three species, which are distinguished from the rest of the thelypteroid ferns by their habit of a peculiar, or rather an archaic type, by being adapted to a swamp life, by nearly glabrous mature fronds, not characterized by the presence of the typical persistent needle-like gray hairs especially along the upper side of rachis and costa of pinnae, which latter is hardly or at most only shallowly grooved above, all these characters combined with its distinct geographic areal tend to indicate that the genus is an old one and represents one of the relicts of probably the early Tertiary[14]. Cytologically,

14) From prof. A. L. Takhtajan of the Institute of Botany, Academy of Science, USSR, I have received a couple of excellent photo-prints of a Tertiary fossil fern known as *Polypodites stiriacus* Unger, Chloris Protogaea (1845) 121, t. XXXVI, f. 15, discovered from coal mines in s. w. part of Soviet Union, which indicates, unmistakably, that the history of the goniopteroid-veined ferns of the family Thelypteridaceae dated back as early as the middle Tertiary Period, while the free-veined thelypteroid ferns may originated much earlier in the geological history. It may be further noted here that *Polypodites stiriacus* Unger differs from the modern genus of *Abacopteris* Fée, especially *A. penangiana* (Hook.) Ching, a fern common in the Himalayan region today, in no respect, as far as habit, shape of pinnae and type of

Manton[15] revealed long ago that *Thelypteris palustris* (Salisb.) Schott has a chromosome number n = 35.

Typus generis: ***Thelypteris palustris*** (Salisb.) Schott.

1. ***Thelypteris palustris*** (Salisb.) Schott, Gen. Fil. (1834) ad t. 10. **沼泽蕨**

本种广布于北半球，从温带向南达我国西部高山到喜馬拉雅山地，海拔达 3500 米。

2. ***Thelypteris squamulosa*** (Schlescht) Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 329. **鱗片沼泽蕨**

本种广布于泰国、苏門答腊、伊里安、印度南部、馬尔加什、南非及新西兰。最近也在我国云南(石坪)发現，生沼泽中。

3. ***Thelypteris grisea*** (Bak.) Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 331.

到現在为止，本种仅知产于印度南部。

## 2. 假鱗毛蕨属 (*Lastrea* Bory)

中等大的陆生温带植物。根状茎短而直立或斜升。叶簇生，形如 *Dryopteris filix-mas*，有短柄，柄长 10 厘米左右，深禾稈色，密被棕色闊披針形的大而薄的鳞片，向上漸少，直达叶軸；叶片倒披針形，长达 60 厘米，中部寬 10—15 厘米或稍寬，向下部逐漸变狹，二回羽状深裂；羽片多数(約达 30 对)，斜展，对生或向上互生，下部的逐漸縮短，最下的呈三角状小耳形，中部羽片披針形，漸尖头，基部截形，对称，无柄，紧靠叶軸，羽軸下面隆起，略被疏柔毛或无毛，上面几平坦或干后稍凹入，光滑无毛，羽裂深达羽軸两側的狹翅；裂片約 15 对，斜展，三角状披針形，全緣(基部有时有圓齿)，鈍尖头。叶脉在裂片上为羽状，侧脉斜出，单一，或下部的往往从中部以上二叉，达于叶边。叶草質，干后褐綠色，上面光滑无毛，下面在叶軸和羽軸上有疏鱗片，并沿羽軸和主脉有疏柔毛或近无毛。孢子囊羣圓形，生于叶脉中部以上或接近叶边，远离主脉，有圓腎形的蓋，成熟时脫落，孢子两面型，腎形，表面有密的細疣状突起(染色体 n = 34)。

属的模式：***Lastrea oreopteris*** Bory.

本属仅有 2 个相近的种或地理小种，一种分布于欧洲、亚洲西部及美洲北部，另一种分布于亚洲东北部(我国东北、朝鮮、日本及苏联远东区)。生温带林下。

过去本属在含义上极为广泛，有些学者（如 E. B. Copeland）用它来代替了广义的 *Thelypteris* 属，造成了命名上的极大混乱，按 Bory 建立本属的根据是 *Polypodium oreopteris* Ehrh. = *Polypodium limbospermum* Allioni，它在生态、形态、細胞学等方面与 *Thelypteris* Schmidel, *Phegopteris* Fée, *Metathelypteris* Ching, *Parathelypteris* Ching 等属都不相同，不能混为一談，从植物形体、形态結构，裂片的主脉以銳角与羽軸相交下延，遍体有很多鱗片，只有极稀疏的毛（或几无毛），羽軸上面几光滑无毛，染色体 n = 34 等特征判断，本属在金星蕨科(Thelypteridaceae)的位置不完全恰当，可能归入蹄盖蕨科(Athyriaceae)

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venation are concerned. With confidence, I identify it with this genus and call it ***Abacopteris stiriaca*** (Unger) Ching, comb. nov.—*Cyclosorus stiriacus* (Unger) Ching et Takht., Paleobotanica IV (1963) 195, f. 1, 2.

15) Problems of Cytology and Evolution in the Pteridophyta (1950) 86.

較为合适。从形体看，可以怀疑本属可能是蹄盖蕨属（*Athyrium*）与鳞毛蕨属（*Dryopteris*）的属間杂交产物，并且在一般外形上較显著地傾向于鳞毛蕨。

## 2. ***Lastrea*** Bory

Bory, Dict. Class. d'Hist. Nat. VI (1824) 588; IX (1826) 232.

The genus *Lastrea* Bory as typified by the well-known classical fern, *Dryopteris oreopteris* (Ehrh.) Maxon from Europe and North America, represents another relict of fern genera of probably the early Tertiary, for it appears to be very different from other members of "*Thelypteris*" and specially from *Thelypteris palustris* (Salisb.) Schott in the presence on the stipe and rachis of the large, brown, thin, copious scales of dryopteroid type, in the absence of the characteristic needle-like hairs especially along the rachis and costa of pinnae above and in the nearly flattened or only slightly grooved lower part of the costa of pinnae upon drying.

In fact, its peculiar habit is reminiscent of an *Athyrium*, or of a *Dryopteris* rather than a *Thelypteris*, to both of which it was referred at one time or another.

According to Manton, the genus further differs from *Thelypteris palustris* (Salisb.) Schott in having a chromosome number $n = 34$.

Typus generis: ***Lastrea oreopteris*** Bory.

In choosing a generic name, Copeland has properly revived *Lastrea* Bory, but he made a mistake by extending its sense to include, indiscriminately, *Thelypteris* Schmidel and other related genera as well.

As construed here, *Lastrea* Bory is confined only to the following two species from the temperate regions of the Northern Hemisphere.

**1. *Lastrea limbosperma*** (Allioni) Ching, comb. nov.

Basionym: *Polypodium limbospermum* Allioni, Auct. Fl. Pedemont (1789) 49 (prior to April 1, teste H. P. Fuchs).

Synonyms: *Thelypteris limbosperma* H. P. Fuchs, American Fern Journ. XLVIII (1958) 144.

*Polypodium oreopteris* Ehrh. Beitr. z. Naturkunde Wiss. IV (1789) 44 (later than April 3, teste H. P. Fuchs).

*Lastrea oreopteris* Bory, Dict. Class. d'Hist. Nat. IX (1826) 233.

*Dryopteris oreopteris Maxon,* Proc. U.S. Nat. Mus. XXIII (1901) 630.

本种广布于欧洲及北美洲，不产亚洲。

2. ***Lastrea quelpaertensis*** (Christ) Cop. Gen. Fil. (1947) 140. **亚洲假鳞毛蕨**

Basionym: *Dryopteris quelpaertensis* Christ, Bull. Acad. Géogr. Bot. Mans (1910) 7.

Synonyms: *Athyrium quelpaertensis* Ching in C. Chr. Ind. Fil. Suppl. III (1934) 111.

*Thelypteris quelpaertensis* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 320.

*Ctenitis quelpaertensis* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4

(1939) 81.

*Dryopteris kamtschatica* Kom. in Fedde, Repert. Sp. Nov. XXIII (1914) 84.

本种的分布区仅限于亚洲东北部：我国东北、朝鲜、日本北部与中部以及苏联远东区。

本种无疑是上一种的地理小种，二者的区别已在作者的专著中指出，无需贅述。

### 3. 金星蕨属（*Parathelypteris* Ching），新属

中形陆生植物。根状茎細长横走或短而直立，稍有鱗片或几无鱗片；叶远生，近生或簇生，有柄，柄为淡禾稈色或至少基部或下部为栗褐色或黑色，向上为栗色，棕色或禾稈色，多少有光泽，基部光滑无毛或有灰白色的針状长毛(往往由 2—4 个細胞組成)，向上近光滑或有柔毛；叶片长圓披針形或披針形，漸尖头，二回深羽裂；羽片多数，斜展，互生，狹披針形或綫状披針形，漸尖头，无柄(偶有短柄)，下部的逐漸縮短或基部一对不縮短，但其基部变狹，不与羽軸合生，基部截形或圓截形，两側对称，羽裂深几达羽軸，少有达 1/2，裂片通常多数，接近，斜展或近平展，长圓形，也有长方形或近方形，圓头或圓截头，少有尖头，叶脉分离，每裂片有側脉 3—8 对，斜出，单一（极少二叉），达于叶边。叶草質至紙質，干后黃綠色或褐色，两面多少有針状毛或柔毛，罕有下面光滑无毛，下面通常有橙色腺体，羽軸上面有 1 条縱沟，密被刚毛，下面隆起，通常多少被柔毛或針状毛，少有无毛。孢子囊羣圓形，中等大，位于裂片的主脉两側，各成 1 行，生側脉中部或近頂端而接近叶边，有盖，盖大或中等大，圓腎形，棕色，厚膜質，宿存，有毛或无毛，孢子腎状二面型，透明，表面有連續的翅状周壁。

属的模式：**金星蕨 *Parathelypteris glanduligera*** (Kunze) Ching.

約 85 种，广布于世界热带和亚热带，中国現知有 52 种，主要分布于长江以南各省。

本属形体及毛的类型极似凸軸蕨属（*Metathelypteris*），但羽軸上面不呈圓形隆起，而凹陷成一縱沟，叶脉伸达叶边，孢子囊羣大，盖也大，棕色，膜質，通常宿存，叶为厚草質或紙質，干后黃綠色或褐色，叶柄下部或全部往往为栗色，有光泽，基部无毛或有灰白色針状长毛，故易区别。

### 3. ***Parathelypteris*** (H. Ito) Ching, gen. nov.

*Thelypteris* sect. *Parathelypteris* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 127.

*Thelypteris* subgenus *Euthelypteris* Ching, *Group* 2 Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 246.

*Lastrea* Cop. Gen. Fil. (1947) 136, pro parte.

Genus novum habitu generali *Metathelypteridi* (H. Ito) Ching (vide infra) proxime affinis, a qua differt fronde oblongo-lanceolata, semper profunde bipinnatisecta, stipite praesertim ad partem basalem plerumque castaneo vel castaneo-brunneo, nitido, nudo vel pilis longis, albo-griseis, patentibus, saepe 2—4-cellularibus sat dense vestito suffulta, textura firme herbacea vel chartacea, colore in statu sicco brunnescenti vel obscura, costis pinnarum lateralium supra haud elevatis sed semper longitudinaliter anguste sulcatis,

nervis in segmentis liberis, simplicibus, omnibus marginem eorum attingentibus.

Ca. 85 species in regionibus tropicis vel subtropicis per totum orbem late dispersae.

Typus generis: ***Parathelypteris glanduligera*** (Kunze) Ching (basionym: *Aspidium glanduligerum* Kunze, Anal. Pterid. [1837] 44).

According to Manton[16] *Thelypteris pectiniformis* (C. Chr.) Ching has a chromosome number n = 72.

Sect. 1. ***Parathelypteris.*** **禾稈色組** Plantis potius mediocribus, stipitibus pallide stramineis, basi nudis aut pilis brevibus unicellularibus perparce vestitis, lamina frondis subtus saepe aureo-glandulosis aut eglandulosis, pinnis inferioribus saepe gradatim abbreviatis aut non abbreviatis, soris in nervis prope marginem subterminaliter sitis, indusiis parvis, firmulis, pallide brunnescentibus, demum evanidis.

Typus sectionis: ***Parathelypteris glanduligera*** (Kunze) Ching.

Series 1. ***Nipponicae*** Ching, ser. nov. **縮羽系** Pinnis lateralibus inferioribus deorsum gradatim abbreviatis vel fere in auriculas reductis.

Typus seriei: ***Parathelypteris nipponica*** (Franch. et Sav.) Ching (basionym: *Aspidium nipponicum* Franch. et Sav. Enum. Pl. Jap. II [1876] 242; [1879] 636).

Series 2. ***Glanduligerae*** Ching, ser. nov. **金星蕨系** Pinnis lateralibus inferioribus deorsum haud abbreviatis vel rarissime paulo abbreviatis.

Typus seriei: ***Parathelypteris glanduligera*** (Kunze) Ching

Sect. 2. ***Melanostipes*** Ching, sect. nov. **栗稈色組** Plantae majores, stipitibus per totam longitudinem vel saepe tantum ad partem basalem pulchre castaneis vel castaneo-brunneis, basi nudis vel saepe pilis longis albo-griseis patentibus, 2-4-cellularibus dense vestitis, lamina frondis subtus aureo-glandulosa aut eglendulosa, pinnis lateralibus inferioribus haud abbreviatis, soris in medio nervorum inter marginem costamque dorsaliter sitis, indusiis magnis, brunneis, membranaceis, persistentibus praeditis.

Typus sectionis: ***Parathelypteris japonica*** (Bak.) Ching (basionym: *Nephrodium japonicum* Bak. Ann. Bot. V [1891] 310).

Series 1. ***Japonicae*** Ching, ser. nov. **有腺体系** Lemina frondis subtus glandulis aurantiacis globosis plus minusve ornata.

Typus seriei: ***Parathelypteris japonica*** Ching

Subseries 1. ***Hirsutipedes*** Ching, subser. nov. **毛脚亚系** Stipite frondis ad basin pilis longis, albo-griseis, patentibus, 2-4 cellulis compositis dense vestito.

Typus subseriei: ***Parathelypteris hirsutipes*** (Clarke) Ching (basionym: *Nephrodium gracilescens* var. *hirsutipes* Clarke, Trans. Linn. II. Bot. I [1880] 514, t. 67, f. 1.)

Subseries 2. ***Japonicae*** Ching, subser. nov. **光脚亚系** Stipite frondis ad basin perfecte nudo vel interdum breve hirsuto.

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16) In Holttum, Ferns of Malaya (1954) 624.

Typus subseriei: ***Parathelypteris japonica*** (Bak.) Ching

Series 2. ***Castaneae*** Ching, ser. nov. **无腺体系** Lamina frondis subtus glandulis aurantiacis nullis.

Typus seriei: ***Parathelypteris castanea*** (Tagawa) Ching (basionym: *Dryopteris castanea* Tagawa, Acta Phytotax. et Geobot. IV [1935] 132).

The following representive species of the genus known hitherto from the region are arranged according to the foregoing system of classification.

## Sect. 1. *Parathelypteris* 禾稈色組

### Ser. 1. *Nipponicae* Ching 縮羽系

1. ***Parathelypteris beddomei*** (Bak.) Ching, comb. nov. **长根金星蕨**

Basionym: *Nephrodium beddomei* Bak. in Hook et Bak. Syn. Fil. (1867) 267.

Synonym: *Thelypteris beddomei* Ching, Bull. Fan. Mem. Inst. Biol. VI (1936) 318.

本种广布于热带亚洲各地;在中国仅知产于台湾。

2. ***Parathelypteris nipponica*** (Franch. et Sav.) Ching, comb. nov. **中日金星蕨**

Basionym: *Aspidium nipponicum* Franch. et Sav. Enum. Pl. Jap. II (1867) 242; (1869) 636.

Synonyms: *Thelypteris nipponica* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 319.

*Lastrea nipponica* Cop. Gen. Fil. (1947) 139.

本种广布于我国东部及中部;也产于日本及朝鲜南部。

本种的一个近亲种为产于北美洲东部的 ***Parathelypteris novoboracensis*** (Linn.) Ching, comb. nov. (basionym: *Polypodium novoboracense* Linn. Sp. Pl. II [1753] 1091).

### Ser. 2. *Glanduligerae* Ching 金星蕨系

3. ***Parathelypteris grammitoides*** (Christ) Ching, comb. nov. **矮小金星蕨**

Basionym: *Aspidium grammitoides* Christ, Bull. Herb. Boiss. VI (1898) 193.

Synonym: *Thelypteris grammitoides* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 317.

本种产于我国台湾;也产于菲律宾的吕宋。

4. ***Parathelypteris cystopteroides*** (Eaton) Ching, comb. nov. **馬蹄金星蕨**

Basionym: *Athyrium cystopteroides* Eaton, Proc. Amer. Acad. IV (1858) 110.

Synonyms: *Thelypteris cystopteroides* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 316.

*Lastrea cystopteroides* Cop. Gen. Fil. (1947) 138.

本种仅产于我国福建和台湾;日本及朝鲜南部也产之。

5. ***Parathelypteris angustifrons*** (Miq.) Ching, comb. nov. **狭叶金星蕨**

Basionym: *Aspidium angustifrons* Miq. Ann. Mus. Lugd. Bat. III (1867) 178.

Synonyms: *Thelypteris angustifrons* Ching, Bull. Fan Mem. Inst. Biol. VI (1936)

318.

*Lastrea miqueliana* Tagawa, Acta Phytotax. et Geobot. XV (1953) 14.

本种仅产我国福建及台湾；也产日本，常見。

6. ***Parathelypteris serrulata*** (Ching) Ching, comb. nov. **有齿金星蕨**

Basionym: *Thelypteris serrulata* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 319.

本种特产我国四川及貴州。

7. ***Parathelypteris glanduligera*** (Kunze) Ching, comb. nov. **金星蕨**

Basionym: *Aspidium glanduligerum* Kunze, Anal. Pterid. (1837) 44.

Synonym: *Thelypteris glanduligera* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 320.

本种产于我国东部、中部及南部，极为普遍；也广布于日本、朝鮮、緬甸北部和印度北部（阿薩姆）。

8. ***Parathelypteris subimmersa*** (Ching) Ching, comb. nov. **海南金星蕨**

Basionym: *Thelypteris subimmersa* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 306.

特产于我国海南島。

9. ***Parathelypteris immersa*** (Bl.) Ching, comb. nov.

Basionym: *Aspidium immersum* Bl. Enum. Pl. Jav. (1828) 156.

Synonym: *Thelypteris immersa* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 306.

本种产于摩洛哥、馬来亚及菲律宾。

Sect. 2. ***Melanostipes*** Ching **栗秆色組**

Ser. 1. ***Japonicae*** Ching **有腺体系**

Subser. 1. ***Hirsutipedes*** Ching **毛脚亚系**

10. ***Parathelypteris petelotii*** (Ching) Ching, comb. nov. **长毛金星蕨**

Basionym: *Thelypteris petelotii* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 326.

本种特产我国广西；也产越南北部。

11. ***Parathelypteris hirsutipes*** (Clarke) Ching, comb. nov. **毛脚金星蕨**

Basionym: *Nephrodium gracilescens* var. *hirsutipes* Clarke, Trans. Linn. Soc. II, Bot. I (1880) 514, t. 67, f. 1.

Synonym: *Thelypteris hirsutipes* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 314.

产我国云南南部及东南部；也产錫金。

Subser. 2. ***Japonicae*** Ching **光脚亚系**

12. ***Parathelypteris chinensis*** (Ching) Ching, comb. nov. **中华金星蕨**

Basionym: *Thelypteris chinensis* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 311.

Synonyms: *Aspidium parathelypteris* Christ, Bull. Soc. Bot. France LII, Mém. 1 (1905) 36.

*Dryopteris parathelypteris* C. Chr. Ind. Fil. (1905) 240.

*Thelypteris parathelypteris* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 314.
本种广布于我国东部及西部。特有种。

13. ***Parathelypteris japonica*** (Bak.) Ching, comb. nov. **光脚金星蕨**
Basionym: *Nephrodium japonicum* Bak. Ann. Bot. V (1891) 318.
Synonym: *Thelypteris japonica* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 312.
本种产我国中部及中南部;也产于日本及朝鲜南部。

14. ***Parathelypteris viscosa*** (J. Sm.) Ching, comb. nov.
Basionym: *Lastrea viscosa* J. Sm. Journ. Bot. III (1841) 412, nom. nud.
Synonym: *Thelypteris viscosa* Ching, Bull. Fan Mem. Inst. Biol. X (1941) 253.
本种产于馬来亚及菲律宾。

Ser. 2. ***Castaneae*** Ching **无腺体系**

15. ***Parathelypteris castanea*** (Tagawa) Ching, comb. nov. **台湾金星蕨**
Basionym: *Dryopteris castanea* Tagawa, Acta Phytotax. et Geobot. IV (1935) 132.
Synonym: *Thelypteris castanea* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 315.
特产于我国台湾。

16. ***Parathelypteris angulariloba*** (Ching) Ching, comb. nov. **鈍角金星蕨**
Basionym: *Thelypteris angulariloba* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 323.
本种产于我国广东、广西及福建。

17. ***Parathelypteris indo-chinensis*** (Ching) Ching, comb. nov. **滇越金星蕨**
Basionym: *Thelypteris indo-chinensis* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 327.
本种产我国广西南部;也产越南北部。

18. ***Parathelypteris simozawae*** (Tagawa) Ching, comb. nov. **琉球金星蕨**
Basionym: *Thelypteris simozawae* Tagawa, Acta Phytotax. et Geobot. VI (1937) 157.
本种仅产琉球;也产我国台湾。
叶片近二型,为一突出之种。

19. ***Parathelypteris pectiniformis*** (C. Chr.) Ching, comb. nov.
Basionym: *Dryopteris pectiniformis* C. Chr. Gard. Bull. Str. Settl. IV (1929) 379.
Synonyms: *Thelypteris pectiniformis* Ching, Bull. Fan Mem. Inst. Biol. X (1941) 253.
*Thelypteris subglanduligera* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 323.
本种特产于馬来亚。

## 4. 凸軸蕨属 (*Metathelypteris* Ching), 新属

中小形陆生植物。根状茎短而横卧或直立,稍有鳞片;叶簇生或近簇生,有柄,叶柄淡綠色,近光滑或略有短柔毛;叶片长圓形,二回羽状深裂,少有三回羽状;羽片和各回小羽片通常开展或近平展,如叶为三回羽状,则一回小羽片彼此分离,从不以狭翅沿羽軸两側

下延而彼此連結，羽軸和小羽軸上面隆起成圓形；叶脉分离，单一或有时为不对称的二叉，斜展，不达叶边，而止于叶边以內。叶为草質，干后草綠色，两面多少被单細胞（偶有2—4个細胞）的灰色短柔毛，尤以各回羽軸上面为密，叶面有时光滑，下面不具橙色球形腺体（或偶有）。孢子囊羣小，圓形，通常頂生于叶脉（有时近頂生），有蓋，蓋小或中等大，圓腎形，以缺刻着生，通常为綠色（罕为棕色），有毛或近光滑，宿存。孢子二面型，腎形，透明，表面有連續的翅状周壁。

屬的模式：**凸軸蕨** ***Metathelypteris gracilescens*** (Bl.) Ching

約有20余种，主产亚洲大陆的亚热带，以中国南部为分布中心，向西至喜馬拉雅，向南至南洋羣島，向东至日本、菲律宾。中国現知有16种。

本屬为一极自然的蕨屬，其形体极似金星蕨屬（*Parathelypteris*），不同点主要在于叶为較薄的草質，干后呈綠色，下面无球形橙色腺体（或偶有），羽軸上面隆起呈圓形，从不凹陷成纵沟，叶脉不达叶边，而止于叶边之內。孢子囊羣頂生（或近頂生）于叶脉，蓋常为綠色。

本屬与針毛蕨屬（*Macrothelypteris*）在分类位置上最为接近，但植物形体远較小，叶片为长圓形，概为二回羽裂（罕有三回羽状），如叶为三回羽状，則一回小羽片彼此分离，基部从不以狹翅沿羽軸两側下延而彼此連接。叶薄草質，干后草綠色，两面近光滑或有短柔毛，毛由单細胞組成（罕有2—4个細胞），囊羣蓋中等大，綠色，宿存，故易区别。

### 4. ***Metathelypteris*** (H. Ito) Ching, gen. nov.

*Thelypteris* sect. *Metathelypteris* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 137; Iwatsuki, Acta Phytotax. et Geobot. XVIII (1960) 147.

*Thelypteris* subgenus *Euthelypteris* Ching, *groups* 3, 9, 10 Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 248.

Genus novum ex affinitate *Parathelypteridis* (H. Ito) Ching, a qua recedit lamina textura herbacea vel tenuiter herbacea, utrinque breve puberula vel subglabra, in statu sicco viridi, subtus glandulis auratis vel aurantiacis globosis destituta, bipinnatisecta vel interdum tripinnatifida; costis pinnarum pinnularumque supra haud longitudinaliter sulcatis sed elevatis teretibusque, nervis in segmentis ultimis marginem haud attingentibus sed intra eum in parenchymate terminantibus; soris in nervulis terminaliter vel subterminaliter sitis, indusio mediocri saepe viridescenti, persistenti praeditis.

Ca. 20 species in Asia tropica praesertim in China australis late dispersae.

Typus generis: ***Metathelypteris gracilescens*** (Bl.) Ching (basionym: *Aspidium gracilescens* Bl. Enum. Pl. Jav. [1828] 155).

According to Manton[17] *Thelypteris singalaensis* (Bak.) Ching has a chromosome number n = 35.

The following are the species of the genus known hitherto from the mainland of

17) Holttum. Ferns of Malaya (1954) 624.

Asia and adjacent regions.

1. ***Metathelypteris adscendens*** (Ching) Ching, comb. nov. **光叶凸轴蕨**

Basionym: *Thelypteris adscendens* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 332.

本种仅产我国广东、广西及福建。为特有种。

2. ***Metathelypteris laxa*** (Franch. et Sav.) Ching, comb. nov. **凸轴蕨**

Basionym: *Aspidium laxum* Franch. et Sav. Enum. Pl. Jap. II (1876) 237; (1879) 631.

Synonyms: *Thelypteris laxa* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 333.

*Lastrea laxa* Cop. Gen. Fil. (1947) 139.

本种广布于我国东部及西南各省；也产于日本及朝鲜南部。

3. ***Metathelypteris gracilescens*** (Bl.) Ching, comb. nov. **凸轴蕨**

Basionym: *Aspidium gracilescens* Bl. Enum. Pl. Jav. (1828) 155.

Synonym: *Thelypteris gracilescens* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 327.

本种在我国仅知产于台湾，但广布于馬来亚、玻里尼西亚及菲律宾。

4. ***Metathelypteris uraiensis*** (Rosenst.) Ching, comb. nov. **烏来凸軸蕨**

Basionym: *Dryopteris uraiensis* Rosenst. Hedwigia LVI (1915) 341.

Synonyms: *Thelypteris uraiensis* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 336.

*Dryopteris hirsutisquama* Hay. Ic. Pl. Form. V (1915) 277.

本种特产我国台湾。

5. ***Metathelypteris hattori*** (H. Ito) Ching, comb. nov. **林下凸軸蕨**

Basionym: *Dryopteris hattori* H. Ito, Bot. Mag. Tokyo XLIX (1935) 359.

Synonyms: *Thelypteris hattori* Tagawa, Acta Phytotax. et Geobot. V (1936) 195.

*Lastrea hattori* Tagawa, l.c. XV (1953) 14.

*Thelypteris nemoralis* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 338.

本种广布于我国东部及中部山地，向西达四川；日本也产之。

6. ***Metathelypteris flaccida*** (Bl.) Ching, comb. nov. **薄叶凸軸蕨**

Basionym: *Aspidium flaccidum* (Bl.) Enum. Pl. Jav. (1823) 161.

Synonym: *Thelypteris flaccida* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 336.

本种产于我国貴州、广西及云南南部；也广布于热带亚洲其他地区。

7. ***Metathelypteris singalaensis*** (Bak.) Ching, comb. nov.

Basionym: *Nephrodium singalaense* Bak. Journ. Bot. (1880) 212.

Synonym: *Thelypteris singalaensis* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 334.

本种产于馬来半島、苏門答腊、加里曼丹、摩洛哥等地。

8. ***Metathelypteris decipiens*** (Clarke) Ching, comb. nov.

Basionym: *Nephrodium gracilescens* var. *decipiens* Clarke, Trans. Linn. Soc. II, Bot. I (1880) 514, t. 65, f. 2.

Synonym: *Thelypteris decipiens* Ching, Bull. Fan Mem. Inst. Biol. VI (1946) 335.

本种特产于錫金。

## 5. 肿足蕨属（*Hypodematium* Kunze）

中等大或中小形的石灰岩縫的旱生植物。根状茎細而横臥，連同叶柄基部被一丛重迭复盖的密鳞片，鳞片大，紅棕色，有光泽，披針形，长漸尖头，全緣，光滑，宿存；叶近簇生，二列，有柄，叶柄禾稈色，宿存，基部膨大成梭状，长1—2厘米，但完全隐沒于鳞片中，向上光滑，或疏被柔毛；叶片为五角状三角形或闊卵状五角形，漸尖头，三至四回羽裂，遍体通常密被灰白色单細胞长柔毛或細长針状毛，叶軸和羽軸下面往往还有腺毛；羽片有柄，斜向上，近对生，向上的互生，基部一对最大，有长柄，上先出，基部下側最闊，各回基部小羽片近上先出或对生；一回小羽片基部圓楔形或闊楔形，下側以狹翅下沿于羽軸，基部下側一片最大。小羽軸两面均隆起，上面有毛。叶脉分离，羽状，达于叶边，下面隆起，干后上面往往下陷。叶为草質，干后淡綠色。孢子囊羣圓形，有盖，生于小脉背上；囊羣盖圓腎形或馬蹄形（間有腎形），通常大，膜質，宿存。多少有毛，孢子两面型，卵圓形，不透明，表面有粗疣状突起。

属的模式：***Hypodematium onustum*** Kunze.

本属过去一直認为只有1种，現經研究約有15种，产亚洲和非洲亚热带至暖温带北部，中国现知有12种，为本属分布中心，除东北和西北地区外，全国均有分布。生低地干旱蔭蔽的石灰岩縫中。

本属为金星蕨科的一个突出的属，它的分类位置較难肯定，可能接近凸軸蕨属（*Metathelypteris*），但它的膨大的叶柄基部密复着紅棕色大鳞片这一特性，使本属在金星蕨科的各属中显得不完全协調，这可能是由于本属的特殊生境所引起的一种特殊适应性状。

## 5. *Hypodematium* Kunze

Kunze, Flora II (1833) 690; China, Sunyatsenia III (1935) 8.

Type of the genus: ***Hypodematium onustum*** Kunze, regarded as a synonym of *Hypodematium crenatum* (Forsk.) Kuhn from Egypt.

*Hypodematium,* a limestone-dwelling genus, is characterized by a decidedly swollen base of its stipe, immersed completely in a dense tuft of large, thin, brightly reddish-brown, entire scales, by densely setose or often glandular deltoid-ovate lamina, tripinnate at the base and bipinnate in the upper part, by an anadromous branching system and by generally large, grayish, vaulted, setose, reniform indusium, sometimes athyrioid in outline.

An unique genus among the thelypteroid ferns in that it finds no close relatives, but, when all the characters are compared, its affinity with the thelypteroid ferns turns out to be true. Copeland[18] "with some confidence" placed it with *Woodsia,* but this is most unlikely, for there is hardly anything that would indicate such a relationship.

According to Mehra and Loyal[19], "*Hypodematium crenatum*" from India has a

18) Genera Filicum 108 (1947).

19) Mehra and Loyal, Curr. Sci. XXV (1956) 363.

chromosome number n = 41, which indicates the genus being, cytologically, very remote from the rest of the genera in the family Thelypteridaceae.

The genus has been badly understood as to the number of its constituent species. In my recent work on the available herbarium material of the genus, I recognized 12 species from the mainland of Asia, whose classification and descriptions will be found in the *Flora Reipublicae Popularis Sinicae*, vol. IV.

### 6. 針毛蕨属 (*Macrothelypteris* Ching), 新属

中等大的陆生植物，有时近树状，高达7米。根状茎短而直立或往往短而横卧，斜出，被棕色厚質披針形的长鱗片，边緣有針狀疏睫毛。叶簇生，柄为禾稈色或酒紅色，光滑或被披針形的厚鱗片，脫落后往往留下半月形的凸起；叶片大，闊卵状三角形，三回羽状至四回羽裂，各回羽片开展或近平展，一回小羽片沿羽軸两側以狹翅相連，各回羽軸上面圓而隆起，干后为黃綠色，紙質或草質，两面沿各羽軸多少被毛，罕有无毛，毛为灰白色，細长，針状，由几个长細胞組成，叶軸上除毛外，往往有少数披針形或鉆形厚鱗片和棕色多細胞的針状粗毛，脫落后留下凸起。叶脉分离，小脉单一，不达叶边。孢子囊羣小，圓形，生于小脉近頂端，无盖或有极小的盖，早消失，孢子两面型，近腎形，透明，表面有闊翅。

属的模式：**針毛蕨 *Macrothelypteris oligophlebia*** (Bak.) Ching

本属現知約有10余种；产亚洲热带和亚热带，生林下，中国有7种。

本属与凸軸蕨属 (*Metathelypteris*) 在分类位置上极为接近，二者的羽軸上面均为圓形隆起，从不下陷成纵沟，小脉不达叶边，但本属植物形体远較高大，叶片广大，卵状三角形，三回羽状或四回羽裂，羽軸两側的一回小羽片基部有下延狹翅相連接，不互相分离，羽片下面沿羽軸有灰白色多細胞細长針状毛疏生。孢子囊羣小，无盖或盖极小，早消失。

### Subtribe ii. **Phegopteridinae** Ching

### 6. ***Macrothelypteris*** (H. Ito) Ching, gen. nov.

*Thelypteris* sect. *Macrothelypteris* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 141; Iwatsuki, Acta Phytotax. et Geobot. XVIII (1960) 155.

*Thelypteris* subgenus *Euphegopteris* Ching, *group* 10 Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 248.

Genus novum *Metathelypteridi* (H. Ito) Ching, proxime affinis, a qua differt plantis multo majoribus, vel interdum subarborescentibus, lamina ampla, tri- vel quadri-pinnata, textura firme chartacea vel subchartacea, in statu sicco brunnescenti vel viridescenti, utrinque praesertim subtus pilis longis, griseis, multicellularibus plus minusve vestita vel rarissime glabrescenti; pinnulis I. Ord. ad rachillas pinnarum semper in alas angustas decurrentibus; soris parvis, indusiis nullis vel rudimentalibus fugaceisque.

Ca. 10 species in Asia tropica aut subtropica late dispersae.

Typus generis: ***Macrothelypteris oligophlebia*** (Bak.) Ching (basionym: *Nephrodium oligophlebium* Bak. Journ. Bot. [1875] 291).

H. Ito chose *Nephrodium oligophlebium* Bak. for the type of his section *Macrothelypteris*. This is certainly a bad choice, for this species is confined by its present distribution to Central and East China only. *Thelypteris uliginosa* (Kunze) Ching (=*M. toressiana*) would be far better for the type of his section, because of its wide range and of being a well-known species in botanical literature.

According to Manton and Sledge, *Thelypteris uliginosa* (Kunze) Ching has a chromosome number n = 62 as against n = 70 for both *Thelypteris flaccida* (Bl.) Ching and *T. singalaensis* (Bak.) Ching.

As construed above, the genus *Macrothelypteris* contains the following ten homogeneous species from the tropical Asia.

1. ***Macrothelypteris ornata*** (Wall.) Ching, comb. nov. **树形針毛蕨**

Basionym: *Polypodium ornatum* Wall. ex Bedd. Ferns S. Ind. (1864) t. 171.

Synonym: *Thelypteris ornata* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 346.

本种产于我国云南西部;緬甸北部、印度北部、錫金、尼泊尔亦产之。

2. ***Macrothelypteris multisecta*** (Bak.) Ching, comb. nov.

Basionym: *Nephrodium multisectum* Bak. Journ. Linn. Soc. XXII (1886) 227.

Synonym: *Thelypteris multisecta* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 347.

本种仅产于苏門答腊及加里曼丹。

3. ***Macrothelypteris setigera*** (Bl.) Ching, comb. nov. **刚鱗針毛蕨**

Basionym: *Cheilanthes setigera* Bl. Enum. Pl. Jav. (1828) 138.

Synonym: *Thelypteris setigera* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 345.

本种广布于馬来亚,玻里尼西亚,向北达我国台湾。

4. ***Macrothelypteris leucolepis*** (Presl) Ching, comb. nov.

Basionym: *Lastrea leucolepis* Presl, Epim. Bot. (1849) 36.

Synonym: *Thelypteris leucolepis* Ching, Bull. Fan Inst. Biol. VI (1936) 345.

本种仅产于菲律宾。

5. ***Macrothelypteris oligophlebia*** (Bak.) Ching, comb. nov. **針毛蕨**

Basionym: *Nephrodium oligophlebium* Bak. Journ. Bot. (1875) 291.

Synonyms: *Thelypteris oligophlebia* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 339.

*Thelypteris uliginosa* var. *calvata* (Bak.) Iwatsuki, Acta Phytotax. et Geobot. XVIII (1960) 158.

本种特产我国中部及东部各省。

var. **elegans** (Koidz.) Ching, comb. nov.

Basionym: *Dryopteris elegans* Koidz. Bot. Mag. Tokyo XXXVIII (1924) 108.

Synonyms: *Thelypteris oligophlebia* var. *elegans* Ching, loc. cit.

*Thelypteris uliginosa* var. *elegans* Iwatsuki, loc. cit. 158.

本变种产地同原种;也产日本。

6. ***Macrothelypteris toressiana*** (Gaud.) Ching, comb. nov. **普通針毛蕨**

Basionym: *Polystichum toressianum* Gaud. in Frey. Voy. Bot. (1824) 333.

Synonyms: *Thelypteris toressiana* Alston, Linnaea XXX (1960) 11.

*Aspidium uliginosum* Kunze, Linnaea (1847) 6.

*Thelypteris uliginosa* Ching, Bull. Fan. Mem. Inst. Biol. VI (1936) 342.

*Thelypteris oligophlebia* var. *lasiocarpa* (Hay.) H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 144.

本种广布于热带亚洲各地,向北达日本。

7. ***Macrothelypteris viridifrons*** (Tagawa) Ching, comb. nov. **假普通針毛蕨**

Basionym: *Thelypteris viridifrons* Tagawa, Journ. Jap. Bot. XII (1836) 747.

本种广布于我国东部及中部各省;也产于日本四国、九州及本州(不产北海道)。

**8. 細裂針毛蕨** 新种

植株高 90—100 厘米。根状茎短而直立,无毛,先端被紅棕色披針形光滑的鱗片。叶簇生,柄长 45—50 厘米(或更长),下部粗 3—4(—5) 毫米,禾稈色,有光泽,通体光滑,基部也不被毛;叶片长 50 厘米,下部寬 25—30 厘米,长圓状卵形,先端漸尖并为羽裂,基部闊圓形,三回羽状;羽片約 15 对,对生或向上部为互生,几无柄,开展,下部的相距 8—10 厘米,基部一对不縮短,向基部稍变狹(由于基部一对小羽片縮短到 1.5 厘米),第二对羽片与基部一对同形,同大,唯基部几不变狹,长 14—18 厘米,中部寬 4—5.5 厘米,披針形,漸尖头,基部近圓截,对称,微有短柄,或几无柄,二回羽状;一回小羽片約 15 对,接近,下部的对生,向上互生,平展,披針形,中部的长 3—3.5 厘米,基部寬 8—10 毫米,漸尖头,基部平截,对称,无柄,以狹翅沿羽軸两側相連,羽状;二回小羽片 12—15 对,接近,平展或斜展,长方形,长 3.5—4.2 毫米,寬 2.2 毫米,圓头,两側平行,銳裂成 3—4 对浅圓齿。叶脉可見,每末回裂片有 4 对,斜上,二至三叉,或为单一。叶为薄草質,干后綠色,羽片下面有灰白色多細胞的开展的針状細长毛(长約 1.5—2 毫米),疏生,上面也有同样的較短毛疏生;各回羽軸淡禾稈色,下面光滑或近光滑。孢子囊羣小,圓形,每末回小羽片有 3—4 对,生于裂片基部上側小脉,中位;囊羣盖小,不甚发育。

特产于云南南部。

本种近于普通針毛蕨(*Macrothelypteris toressiana* [Gaud.] Ching),但叶片分裂較細,各回羽片水平开展,一回小羽片基部闊截形,对称,彼此接近,叶下面的毛較短,故易区别。

***Macrothelypteris contingens*** Ching, sp. nov.

*Thelypteris contingens* Ching, in herb.

Species *M. toressianae* (Gaud.) Ching proxime affinis, a qua differt minore, lamina textura tenuiore, magis divisa, pinnis pinnulisque minoribus et horizontaliter patentibus, pinnulis I. Ord. approximatis, basi utrinque aequilatis truncatisque, pinnulis II. Ord. basi etiam aequilatis, cuneato-truncatisque, segmentis ultimis recte patentibus.

**Yunnan austr.:** Se-song-ban-na, at 706 km. along the kun-loo Highway, *Yunnan Complex Expedition 7303*, (type), 1957, under dense forest, alt. 1050 m.

**9. 长沙針毛蕨** 新种

植株高約 35 厘米。根状茎短而直立，先端密被有毛的紅棕色綫状披針形的鱗片。叶簇生，柄长 13—18 厘米，纤細，下部粗約 1 毫米，基部有灰白色短毛，向上光滑，有光泽；叶片长 25—16 厘米、下部寬 9—11 厘米，长圓三角形，先端漸尖并为羽裂，基部不变狹，三回深羽裂；羽片 13—15 对，近对生（向上互生），有短柄，开展，下部的相距 3—5 厘米，基部一对与第二对同大或稍大，长 6—7 厘米，下部寬 3—3.5 厘米，长三角形，漸尖头，基部近平截，对称，稍变狹，有柄（长約 3 毫米），二回深羽裂；一回小羽片約 12 对，互生，平展，接近，下部的有短柄，基部一对縮短，长約 1 厘米，第二对长 1.4—1.8 厘米（下側的稍长），寬 6—8 毫米，长三角形，短漸尖头，基部截形，对称，略有短柄（两側有翅），以狹翅沿羽軸两側彼此相連，羽裂深达小羽軸两側的狹翅（寬約 1.2 毫米）；末回小羽片約 7 对，开展，接近，长方形，基部一对略长，約 4 毫米，寬 2 毫米，圓头，两側全緣或略呈波形；第二对羽片和基部一对同形，同大，基部不变狹（即基部一对小羽片不縮短，而与第二对同大），闊圓形，对称，有短柄，长約 2 毫米，一回小羽片也有具翅的短柄。叶脉不明显，每末回小羽片有 3—4 对，斜上，单一。叶为薄草质，干后褐綠色，羽片下面有灰白色柔毛（由 2—4 个細胞組成），上面沿主脉和側脉有一二短刚毛；叶軸和羽軸下面禾稈色，光滑。孢子囊羣小，圓形，每裂片有 1—2 枚，生于基部上側或基部小脉的近頂处，每一回小羽片有 7—8 对，位于小羽軸两側，各成 1 行；囊羣盖小，圓腎形，綠色，成熟时隐沒于孢子囊羣中不見。

特产于湖南长沙（岳麓山，爱晚亭）。生水井边。

***Macrothelypteris changshaensis*** Ching, sp. nov.

Species *M. oligophlebiae* (Bak.) Ching arcte affinis, a qua differt multo minore, graciliore, lamina late lanceolata, haud deltoideo-ovata, pinnis lateralibus inferioribus usque ad 7 cm longis, basi 2.5 cm latis, pinnulis I. Ord. basi aequilatis, truncatis, e costis pinnarum recte egredientibus, pinnulis ultimis integris.

**Hunan:** Changsha, Yo-lo Shan, *C. K. Chang* (张志光) *51* (type), by a water well, alt. 60 m., 10, IX, 1957.

## 7. 卵果蕨属 (*Phegopteris* Fée)

中小形的陆生植物。根状茎細长而横走，或有时短而直立，密被鱗片和毛。叶远生或簇生，有柄；叶柄纤細，淡禾稈色，有光泽，基部密被棕色披針形鱗片，边緣略有疏长毛；叶片三角状卵形或狹披針形，二回羽裂，羽片与叶軸合生，或基部一二对分离，下部 1—3 对不縮短或向下逐漸縮短；叶脉单一或多少分叉，伸达叶边。叶草质，两面多少有針状毛，但不具腺体，羽軸、小羽軸和主脉两面均为圓形隆起，上面有毛，毛为单細胞，針状，也有时混生叉状毛，下面被相当多的棕色披針形的长鱗片，边緣有疏长睫毛。孢子囊羣近圓形或长圓形，无盖，生于叶脉中部以上或近頂处；孢子囊上往往有少数直立的針状毛；孢子两面型，腎形，透明，表面平滑或为网状并有翅状周壁。

属的模式：**卵果蕨** ***Phegopteris polypodioides*** Fée.

为一自然的属，仅有 3 个殘存种，产北半球温带，中国現知有 2 种，产华北、东北及长江以南平原和西南高山。

本属不同于紫柄蕨属(*Pseudophegopteris*),除不同的分布区外,在于其植株細瘦,叶柄为淡禾稈色,叶片为三角状卵形或狭披針形,二回羽裂,羽片基部与叶軸合生,下延,叶軸、羽軸下面密被棕色披針形长鱗片,边緣有疏长睫毛,叶脉分离,达于叶边。

## 7. *Phegopteris* Fée

Fée, Gen. Fil. (1850—52) 242.

*Dryopteris* subgenus *Phegopteris* C. Chr. Ind. Fil. (1905) XXI, pro parte.

*Thelypteris* subgenus *Phegopteris* Ching, *group* 5 Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 260.

Type of the genus: **Phegopteris polypodioides** Fée, based upon *Polypodium phegopteris* Linn. Sp. Pl. II (1735) 1089.

*Phegopteris* Fée, like *Thelypteris* Schmidel, is a genus of great antiquity and unique among the thelypteroid ferns, and also appears to be a relict of the early Tertiary in the temperate regions of the Northern Hemisphere. As a genus, it is characterized by a curious frond-form of small size, copiously clad underneath along the rachis, costa and costules, besides gray hairs, in quite large, lanceolate, long-acuminate, dark-brown, or brown scales with long-ciliate margin, by the broadly adnate lateral pinnae with curiously decurrent base along the rachis and by the free veins all reaching the leaf-margin. Stipe of the fronds is slender, pale-colored throughout, with similar scales and hairs near its base and on the rhizome, and the costa of pinnae as in *Pseudophegopteris* Ching is also round-elevated above.

According to Manton, the European Beech Fern has a chromosome number $n = 45$, which is quite extraordinary among the thelypteroid ferns and which alone marks this fern as very different either from *Thelypteris* Schmidel, or *Lastrea* Bory, or other related genera of the family.

As construed here, *Phegopteris* Fée is a genus of only three species, as follows:

1. ***Phegopteris polypodioides*** Fée, Gen. Fil. (1850—52) 242, t. 20, A, f. 1. **卵果蕨**

本种广布于整个北溫带,包括欧亚两洲及北美洲,向南分布到我国西部高山及喜馬拉雅山地。

2. ***Phegopteris hexagonopteris*** (Michx.) Fée, loc. cit. 243.

Basionym: *Polypodium hexagonopterum* Michx. Fl. Bor. Amer. II (1803) 271.

Synonym: *Dryopteris hexagonopteris* C. Chr. Ind. Fil. (1905) 270.

本种仅产于北美洲东部。

3. ***Phegopteris decursive-pinnata*** (van Hall) Fée, loc. cit. 242, t. 20, A, f. 1. **延羽卵果蕨**

Basionym: *Polypodium decursive-pinnatum* van Hall, Nieuwe Verhdl. v. d. Nederl. Inst. V (1836) 204, c. tab.

Synonyms: *Dryopteris decursive-pinnata* C. Chr. Ind. Fil. (1905) 261.

*Thelypteris decursive-pinnata* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 275.
本种广布于我国中部，东部及南部各省，向南达越南北部，向北达朝鮮南部及日本。

本种不同于以上2种之点在于它的叶片为狹披針形，生于短而直立的根状基，其他形态性状均符合本属的特性，但这种奇特的植物在分类学上的位置究竟如何，尙有待于細胞学的研究結果才能最后确定。

## 8. 紫柄蕨属 (*Pseudophegopteris* Ching)，新属

中等大的陆生植物，根状茎短而横臥，或长而横走，叶近生或簇生頂端，有柄，柄通常为紅棕色或栗色，少为禾稈色或棕禾稈色，有光泽，基部有闊披針形鱗片疏生，鱗片全緣，略有短睫毛；叶片往往长逾1米，长圓形，二回羽状或三回羽裂；羽片对生，无柄，不与叶軸合生，也不下延，羽軸上面隆起，有毛，下面往往也为紅棕色，有光泽，光滑无鱗片，或有单細胞的灰白色短毛；叶为草質，干后綠色，叶脉分离，小脉止于离叶边不远处的叶肉內。孢子囊羣长圓形，卵圓形或近圓形，无盖，背生于小脉中部以上，成熟时不汇合；孢子两面型，腎形，透明，表面平滑或呈顆粒状。

属的模式：**紫柄蕨** ***Pseudophegopteris pyrrhorachis*** (Kunze) Ching.

約有10种，产亚洲热带或亚热带，我国現有7种，产西南低山沟谷中，向北至秦岭，东至日本，西达喜馬拉雅山地，南至印度支那及南洋羣島和菲律宾。

本属是从卵果蕨属 (*Phegopteris*) 分离出来的，二者的区别点見卵果蕨属。

## 8. *Pseudophegopteris* Ching, gen. nov.

*Dryopteris* subgenus *Phegopteris* C. Chr. Ind. Fil. (1905) XXI, pro parte.

*Thelypteris* subgenus *Phegopteris* Ching, *group* 4 Ching, Bull. Fan Inst. Biol. VI (1936) 246.

*Phegopteris* Tagawa. Acta Phytotax. et Geobot. VII (1938) 73, non Fée, 1850—52.

*Phegopteris* sect. *Lastrella* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 151, pro parte.

Genus novum soris oblongis vel subglobosis exindusiatis *Phegopteridi* Fée similis, a qua differt stipite castaneo vel interdum brunneo-stramineo, nudo vel subnudo, nitido, lamina frondis oblonga vel raro late lanceolata (haud deltoideo-ovata, nec anguste lanceolata), bipinnata; pinnis lateralibus oppositis, inter se liberis, sessilibus vel brevissime petiolatis, haud ad rachin late adnatis decurrentibusque, facie utrinque glabrescentibus vel inferiore sparse hirsutis, sed squamis brunneis, lanceolatis, acuminatis, margine longe ciliatis destitutis; venulis liberis ad marginem haud attingentibus sed in parenchymate paulo infra marginem terminantibus; sporis reniformibus, transluscentibus, echinatis vel interdum anguste alatis, facie reticulatis vel granulatis.

Ca. 10 species in Asia tropica late dispersae.

Typus generis: ***Pseudophegopteris pyrrhorachis*** (Kunze) Ching (basionym: *Polypodium pyrrhorachis* Kunze, Linnaea [1851] 257).

The group of ferns now under review, ranging throughout tropical Asia with their center of distribution in West China and the Himalayas, has in the past always been associated with *Phegopteris* Fée of the temperate regions, simply because of the similarly exindusiate oblong or roundish sori. However, this is perhaps merely to indicate that they are of a homoplastic origin and not closely related phyletically at all.

The peculiar frond-form of *Phegopteris* Fée with pale-colored stipe, the presence on the under side leaves of plenty of the characteristically lanceolate, brown scales with long-ciliate margin and the free veinlets reaching the leaf margin combined make this classic genus appear to be very incongruent with the present genus, which on morphological ground was placed in group 4, while *Phegopteris* Fée in group 5 in my monograph.

It may be added in passing that Manton[20–21] pointed out long ago that the European Beech Fern has a chromosome number $n = 45$ as against $n = 31$ for *Thelypteris brunnea* (Wall.) China. This great cytological discordance together with corresponding morphological differences between the two genera is a good indication that their generic separation is justified.

As to the generic name, I would, as I did in other cases, have chosen *Lastrella* H. Ito proposed as a section of his *Phegopteris* in Nakai and Honda, Nova Flora Japonica no. 4. (1939) 152, had it not been for the fact that his section name implies only a part of the present genus, while the other part is true *Phegopteris,* for he listed *Phegopteris decursive-pinnata* Fée under his section name too.

The following are the species of the genus known to me from Asia:

1. ***Pseudophegopteris levingei*** (Clarke) Ching, comb. nov. **星毛紫柄蕨**

Basionym: *Gymnogramma aurita* var. *levingei* Clarke, Trans. Linn. Soc. II, Bot. I (1880) 568.

Synonyms: *Dryopteris levingei* C. Chr. Ind. Fil. (1905) 273.

*Thelypteris levingei* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 273.

*Dryopteris bukoensis* Tagawa, Acta Phytotax. et Geobot. I (1932) 89.

*Phegopteris bukoensis* Tagawa, ibidem, VII (1938) 75.

本种广布于我国西部及西北部各省，向西达喜馬拉雅山区，向东达日本。

2. ***Pseudophegopteris aurita*** (Hook.) Ching, comb. nov. **耳状紫柄蕨**

Basionym: *Gymnogramma aurita* Hook. Ic. Pl. (1854) t. 974.

Synonyms: *Phegopteris aurita* J. Sm. Cat. Cult. Ferns (1875) 17.

*Thelypteris aurita* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 266.

本种分布于我国西部，向西經緬甸北部达喜馬拉雅山区，向南达印度支那。

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20) Problem of Cytology and Evolution in the Pteridophytes 85 (195).

21) Observations on Cytology and Taxonomy of Pteridophyte Flora of Ceylon in Phil. Trans. Roy. Soc. London. series B: Biol. Sci. No. 654, vol. 238. (1954) 13.

3. ***Pseudophegopteris subaurita*** (Tagawa) Ching, comb. nov. **假耳状紫柄蕨**

Basionym: *Dryopteris subaurita* Tagawa, Acta Phytotax. et Geobot. I (1932) 157.

Synonyms: *Thelypteris subaurita* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 276.

*Phegopteris subaurita* Tagawa, Acta Phytotax. et Geobot. VII (1938) 73.

本种特产琉球羣島，也产我国台湾。

4. ***Pseudophegopteris oppositipinna*** (v.A.v.R.) Ching, comb. nov. **对生紫柄蕨**

Basionym: *Phegopteris oppositipinna* v. A. v. R., Bull. Jard. Bot. Buit. sér. 2, XVI (1914) 24.

Synonym: *Thelypteris oppositipinna* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 268.

本种分布于我国西南部，喜馬拉雅山区；也产馬来亚。

5. ***Pseudophegopteris pyrrhorachis*** (Kunze) Ching, comb. nov. **紫柄蕨**

Basionym: *Polypodium pyrrhorachis* Kunze, Linnaea XXIV (1851) 257.

Synonyms: *Phegopteris pyrrhorachis* Tagawa, Acta Phytotax. et Geobot. VII (1938) 74.

*Dryopteris brunnea* Wall. ex C. Chr. Ind. Fil. (1905) 255.

*Thelypteris brunnea* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 269.

本种广布于我国西南部及西部、喜馬拉雅山区；印度支那、印度、錫兰及馬来亚也产。

6. ***Pseudophegopteris pallida*** (Ching) Ching, stat. nov. **禾秆紫柄蕨**

Basionym: *Thelypteris brunnea* var. *pallida* Ching, Bull. Fan Mem. Inst. Biol. Bot. Ser. XI (1941) 62.

特产于我国云南及四川西部。

7. ***Pseudophegopteris yunkweiensis*** (Ching) Ching, comb. nov. **云貴紫柄蕨**

Basionym: *Thelypteris yunkweiensis* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 274.

Synonym: *Phegopteris yunkweiensis* Tagawa, Acta Phytotax. et Geobot. VII (1938) 76.

本种分布于我国云南、貴川、广西；也产越南北部。

8. ***Pseudophegopteris paludosa*** (Moore) Ching, comb. nov.

Basionym: *Lastrea paludosa* Moore, Ind. Fil. (1858) 99, *new name.*

Synonyms: *Aspidium paludosum* Bl. Enum. Pl. Jav. (1828) 168, non Raddi, 1825.

*Phegopteris paludosa* J. Sm. Hist. Fil. (1875) 233.

本种分布于馬来亚及菲律宾。

This species has generally been identified with *Dryopteris brunnea* (Wall.) C. Chr. in the past, but it is really very distinct by ample bipinnate glabrous fronds with pale brown stipe and rachis. In general habit, this species appears quite similar to the preceeding one in China.

## 9. 鈎毛蕨属（*Cyclogramma* Tagawa）

中等大的生于常綠闊叶林下沟谷潮湿处的植物。根状茎粗而直立或长而横走，被灰白色单細胞短毛和少数棕色闊披針形的背面和边緣有毛的厚鱗片。叶簇生或散生，有柄，多少被毛或近光滑；叶片长圓形或闊披針形，从不为三角形，草質或紙質，干后褐綠色或褐色，两面多少被灰白色短毛和少数針状粗长毛，后者頂端往往呈鈎状，二回羽状深裂；羽片多数，披針形，深羽裂，开展，无柄，互生或对生，下部数对有时縮短，基部与叶軸着生处的下面具 1 个黑褐色气囊体，通常为瓣状弯曲，有时为粗疣状突起；裂片多数，长圓形或近方形，圓头或鈍头，全緣，边緣有針状毛疏生。叶脉在裂片上为羽状，通常 5—12 对，小脉单一，斜上，基部一对出自主脉基部或基部以上，均伸达缺刻以上的叶边。孢子囊羣圓形，小，由較少的孢子囊組成，背生于側脉中部以上，在主脉两側各成 1 行，每裂片 4—12 对，无盖，往往有短刚毛，孢子囊具短柄，近頂处有 1—4 根直立刚毛，刚毛頂端呈鈎形；孢子两面型，卵形，表面有連續的翅状周壁。

属的模式：***Cyclogramma simulans*** (Ching) Tagawa.

約有 10 余种，主产中国亚热带地区，向西經緬甸北部至喜馬拉雅，向东至日本南部。

在分类系統上本属接近于茯蕨属（*Leptogramma*），但植株形体通常較高大，孢子囊羣圓形，小，由較少的孢子囊組成，羽片多数，分离，向下往往逐漸縮短呈耳形。基部下面与叶軸着生处有 1 明显的气囊体，往往呈托叶状，弯曲。

## 9. *Cyclogramma* Tagawa

Tagawa, Acta Phytotax. et Geobot. VII (1938) 52.

*Thelypteris* subgenus *Phegopteris* Ching, *group* 6 Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 247.

*Glaphyropteris* sect. *Cyclogramma* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 148.

Type of the genus: ***Cyclogramma simulans*** (Ching) Tagawa (basionym: *Thelypteris simulans* Ching, Bull. Fan Mem. Inst. Biol. VI [1936] 280, from Taiwan).

A very natural group of thelypteroid ferns, endemic in the China-Himalayan region and eastwardly to Taiwan and Japan, of which I recognized 8 species as a special group of the subgenus *Phegopteris* in my monograph of *Dryopteris* (pp. 279—285). As was already quite concisely diagnosed by Tagawa, the genus differs from *Phegopteris* in a number of important characters, besides a distinct mode of growth and the fronds always become blackish or dark-colored when dried.

For the type of the genus, Tagawa chose *Thelypteris simulans* Ching, a fern endemic in Taiwan, and this is not quite appropriate, for the Taiwanese species seems to represent only a geographical race of the well-known Himalayan *Cyclogramma auriculata* (J. Sm.) Ching and there are now only a few specimens in existence in the herbaria.

Tagawa has transfered all the 8 species of my monograph into his new genus and

there is no more to be added, except for two corrections in nomenclature, as follows:

1. ***Cyclogramma auriculata*** (J. Sm.) Ching, comb. nov. **耳羽鈎毛蕨**

Basionym: *Phegopteris auriculata* J. Sm. Hist. Fil. (1875) 233, *new name.*

Synonyms: *Polypodium auriculatum* Wall. ex Hook. Sp. Fil. IV (1862) 237, non Linn. 1753.

*Dryopteris himalayensis* C. Chr. Ind. Fil. Suppl. III (1934) 88, *superfluous name.*

*Cyclogramma himalayensis* Tagawa, Acta Phytotax. et Geobot. VII (1938) 55.

*Phegopteris subvillosa* Moore, Ind. Fil. (1861) 308, nom. nud.

*Thelypteris subvillosa* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 279.

本种是本属的一种高大植物，分布于我国云南；也产緬甸北部及喜馬拉雅山区，生于常綠闊叶林下阴湿沟谷內。

2. ***Cyclogramma leveillei*** (Christ) Ching, comb. nov. **狹基鈎毛蕨**

Basionym: *Dryopteris leveillei* Christ, Bull. Acad. Géogr. Bot. Mans XX, Mém. (1909) 176.

Synonyms: *Dryopteris izuensis* Kodama in Matsum. Ic. Koisikav. II (1915) 7, t. 88.

*Theylpteris omeiensis* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 282, pro parte.

*Cyclogramma omeiensis* Tagawa, Acta Phytotax. et Geobot. VII (1938) 53, pro parte.

*Glaphyropteris omeiensis* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 149, pro parte.

本种植物分布于我国四川、貴州、云南及福建和台湾；也产于日本。

This species was wrongly considered by me in my monograph as identical with *Cyclogramma omeiensis* (Bak.) Tagawa, but in re-examining with care the type of Baker's species from Mt. Omei, Szechuan, I found it is specifically distinct from that species, while the Japanese *Dryopteris izuensis* Kodama differs from the present species in no respect.

## 10. 茯蕨属 (*Leptogramma* J. Sm.)

中等大的植物。根状茎短而直立或斜升，略被鱗片；鱗片卵状长圓形或披針形，紅棕色，背面有毛。叶簇生，有柄，叶柄深禾稈色，下部疏被鱗片，通体被开展的灰白色大都为单細胞的針状长毛和单細胞的短刚毛；叶片长圓形，戟形或披針形，二回羽裂；羽片 7—8 对（或稍多），斜展或近平展，披針形，鈍头或漸尖头，基部圓截形或截形，对称，通常无柄，仅下部 1—2 对或数对分离，向上的多少与叶軸合生，基部一对不縮短或略縮短，有时伸长，羽軸上面凹陷成一縱沟，羽裂通常达 1/2—2/3；裂片圓形至长圓形，全緣，圓头，叶脉分离，每裂片有 3—6 对，单一，斜出，伸达叶边，罕有伸达缺刻。叶为草質或紙質，干后褐棕色或褐綠色，两面常有針状毛或短刚毛，或二者混生。孢子囊羣长形，沿側脉生，长略短于側脉，无盖，孢子囊上有 2—6 根直立刚毛；孢子两面型，腎形，表面有細疣状突起。

属的模式：**Leptogramma totta** (Willd.) J. Sm.

約15种，产亚洲热带或亚热带，向西达非洲，中国现知10种，为分布中心，生林下溪边石上。

本属的孢子囊羣如同溪边蕨属(*Stegnogramma*)为长形或长圆形，但植株的形体不同，羽片通常羽裂达1/2—2/3，叶脉分离，頂端从不联結，叶柄基部以上的毛远較短，概为单細胞或无明显的分隔，因此，它的分类学位置在外形上更近于分离脉的类羣，特别有长圆形或近卵圆形、无盖的孢子囊羣的属，如卵果蕨属(*Phegopteris*)，但它的染色体数目 n = 36，因此，在細胞分类学上的位置，却同于假毛蕨属(*Pseudocyclosorus*)，毛蕨属(*Cyclosorus*)，新月蕨属(*Abacopteris*)等有結合脉的、有囊羣盖的类羣，这是非常有趣的。

### 10. **Leptogramma** J. Sm.

J. Sm. Journ. Bot. IV (1841) 51; Hist. Fil. 1875) 231; Ching, Bull. Fan Mem. Inst. Biol. VII (1936) 77.

Type of the genus: **Leptogramma totta** (Willd.) J. Sm. = *Hemionitis pozoi* Lagasca (vide infra).

A small but distinct genus of some 18 species, mostly endemic in China, with a few extending to other parts of tropical Asia and one westwardly to Africa.

The genus differs from *Stegnogramma* Bl. in more deeply pinnatifid pinnae with free venation and in the much shorter unicellular, or not distinctly septate, stouter hairs above the base of stipe. Its relationship with *Cyclogramma* Tagawa is quite obvious, from which it differs in linear sori and in the absence of aerophores along the rachis at the insertion of pinnae underneath.

According to Manton and Sledge[10], both *Leptogramma mollissima* (Desv.) Ching and *Leptogramme africana* (Desv.) Ching have a chromosome number n = 36.

1. **Leptogramma pozoi** (Lagasca) Ching, comb. nov. **非洲茯蕨**

Basionym: *Hemionitis pozoi* Lagasca, Nov. Gen. Sp. (1816) 33.

Synonyms: *Gymnogramma pozoi* Desv. Prodr. (1827) 216.

*Thelypteris pozoi* Morton, Bull. Soc. Bot. France CVI (1959) 234.

*Stegnogramma*. *pozoi* Iwatsuki, Acta Phytotax. et Geobot. XIX (1963) 124.

*Polypodium tottum* Willd. Sp. Pl. V (1810) 201, non Thunb. 1800.

*Acrostichum pilosiusculum* Wilkstr. Kongl. Vet. Acad. Handl. (1825) 439.

*Leptogramma pilosiuscula* Alston, Bol. Soc. Brot. XXX (1956) 17.

*Polypodium africanum* Desv. Prodr. (1827) 239.

*Leptogramma africana* Ching, Sinensia VII (1936) 101.

产非洲。

2. **Leptogramma gymnocarpa** (Cop.) Ching, comb. nov. **吕宋茯蕨**

Basionym: *Dryopteris gymnocarpa* Cop. in Elmer, Leafl. Phil. Bot. III (1910) 807.

Synonyms: *Lastrea gymnocarpa* Cop. Gen. Fil. (1947) 139 et Fern Fl. Phil. II (1960)

325.

*Stegnogramma gymnocarpa* Iwatsuki, Acta Phytotax. et Geobot. XIX (1963) 122.

特产非律宾羣島。

3. ***Leptogramma amabilis*** Tagawa, Acta Phtotax. et Geobot. VII (1938) 76. **琉球茯蕨**

Synonym: *Stegnogramma gymnocarpa* subsp. *amalibis* Iwatsuki, l.c.

特产日本(琉球羣島)。

4. ***Leptogramma petiolata*** Ching, sp. nov. **錫兰茯蕨**

Ex affintate *L. mollissimae* (Kunze) Ching, a qua differt lamina frondis angustiore, 6—10 cm lata vel raro latiore, anguste lanceolata, ad apicem elongatum acuminata, pinnis lateralibus brevioribus, 3—5 cm longis, acutis vel breviter acuminatis, leviter lobato-pinnatifidis, inferioribus 5—7-jugis longe petiolatis, liberis, costa pinnae subtus pilis longioribus densioribusque recte patentibus vestitis.

Ceylon: *Wallich* (type); *Thwaites* 481 (in Herb. Inst. Bot. Acad. Sin. servatis).

## 11. 方稈蕨属 (*Glaphylopteridopsis* Ching), 新属

大中型陆生植物。根状茎短粗,横臥或斜出,光裸,无鱗片也无毛;叶簇生或近生,高可达 2.5 米,有柄,叶柄粗壮如指,光滑;叶片长圓形,基部不变狹。二回羽状深裂;羽片多数,綫状披針形,无柄,分离,对生或近对生其基部与叶軸相連处下面不具瘤状突起的气囊体,叶軸下面呈方形,扁平,光滑,干后常呈微紅色,羽軸上面有 1 条深纵沟,沟內被密毛,羽裂几达羽軸;裂片多数,披針状鐮刀形。叶脉在裂片上羽状,单一,达于叶边,基部一对到达缺刻附近或缺刻以上的叶边,叶紙质或近革质,干后黄綠色,叶軸和羽片两面多少被灰白色的长針状毛,不具腺体。孢子囊羣圓形,生于側脉基部,靠近裂片主脉两側各成 1 行,成熟时彼此密接,常汇合成綫状,无盖;孢子囊近頂处往往具有針状毛,孢子卵圓状两面型,表面有小疣状突起。

为一个小属,現有 4 个相近的种,产中国西南部(云南、四川、貴州),向西到喜馬拉雅,向东到我国台湾及南洋羣島。

本属仅与鈎毛蕨属(*Cyclogramma*)相近,如孢子囊羣无盖,孢子囊上往往具有針状毛,叶脉分离,基部一对叶脉达于叶边,但本属的叶质較厚,干后为淡綠色或黄綠色,根状茎和叶柄光裸,无鱗片,无毛,叶軸下面呈四方形,干后常呈微紅色,羽片基部下面与叶軸相連处不具瘤状突起的气囊体,針状毛先端直,不呈鈎状,孢子囊羣紧靠裂片主脉,成熟时彼此密接,常汇合成綫形。

属的模式: **方稈蕨 *Glaphylopteridopsis erubescens*** (Wall.) Ching.

本属形体頗似产于南美洲的 *Glaphylopteris decussata* Presl, 但除此以外,别无其它共同点。

Tribe II **Goniopterideae** Ching

Subtribe i. **Pseudocyclosorinae** Ching

### 11. ***Glaphyropteridopsis*** Ching, gen. nov.

*Dryopteris* subgenus *Phegopteris* C. Chr. Ind. Fil. (1905) 250, pro parte.

*Thelypteris* subgenus *Phegopteris* Ching, *group* 7 Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 250.

*Glaphyropteris* Fée, Crypt. Vasc. Brazil. II (1872—3), non Presl, 1848.

*Glaphyropteris* sect. *Euglaphyropteris* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 146.

Filix magnifica, *Cyclogrammae* Tagawa proxime affinis, a qua differt rhizomate procumbenti, glabro nudoque (paleis pilisque destituto), lamina ampla, textura subcoriacea vel chartacea, in statu sicco saepe rubro-viridescenti, rachi subtus quadrangulari; pinnis utrinque glabris vel subtus pilis longis albo-griseis unicellularibus apice non hamatis parce vestitis, basi ad insertionem subtus secus rachin aerophoris nullis; venulis in segmentis pluribus, densis, crassis, simplicibus, subtus elevatis, infimo jugo ad marginem paulo supra sinum vel ad sinum protensis sed nunquam conniventibus; soris exindusiatis, magnis, globosis, densis, prope costulas segmentorum sitis (soris costularibus), maturitate longitudinaliter confluentibus.

Typus generis: ***Glaphyropteridopsis erubescens*** (Wall.) Ching (basionym: ***Polypodium erubescens*** Wall. ex Hook. Sp. Fil. IV [1862] 236).

Ca. 4 species in Asia orientalis praesertim in China-Himalaya dispersae.

It has long been noted that of all the Chinese thelypteroid ferns, the well-known exindusiate *Dryopteris erubescens* (Wall.) C. Chr. from the China-Himalayan region always appears to be foreign among all the known genera, in none of which can it possibly fit well. Both Fée and lately H. Ito referred the fern to the peculiar monotypic genus *Glaphyropteris* Presl of tropical America, but with which our fern, in fact, has nothing in common except for the general appearance, hence the generic name.

There are 4 species endemic in China, as follows:

1. ***Glaphyropteridopsis erubescens*** (Wall.) Ching, comb. nov. **方秆蕨**

Basionym: *Polypodium erubescens* Wall. ex Hook. Sp. Fil. IV (1862) 236.

Synonym: *Thelypteris erubescens* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 293.

本种广布于我国西部及西南部，向西經緬甸达喜馬拉雅山区，向东达我国台湾。

In more than a century, this distinct fern has suffered great nomenclatural vicissitudes, having been placed in the past in over half a dozen of genera and none has proved fit well for it.

**2. 毛囊方秆蕨** 新种

植株高达 1.2 米。根状茎粗而横臥，近木質，光滑。叶近生，柄长約 50 厘米，粗 4 毫

米，光滑；叶片长 70 厘米左右，寬約 27 厘米，狭长圓形，先端漸尖，并为羽裂，基部不变狹，二回羽裂达羽軸两側的狹翅（寬約 1 毫米）；羽片 25—30 对，对生或近对生，无柄，平展，自叶軸以直角分出，相距 3 厘米，下部几对不縮短，斜向下，基部变狹，中部羽片长达 17 厘米，寬 2 厘米（基部寬 3 厘米），綫状披針形，长漸尖头，基部近截形，特寬，对称，羽裂深达羽軸两側的狹翅；裂片 25—30 对，平展，披針形，长約 9 毫米（基部一对长 1.5 厘米），寬約 3 毫米，向基部漸寬，頂部漸狹，急尖头，全緣。叶脉明显，每裂片有側脉 11—12 对，斜上，基部一对出自主脉基部，向上伸达有軟骨質的圓缺刻两側附近，彼此分开。叶为厚紙質，干后淡綠色或褐綠色，羽片仅沿羽軸上面有密柔毛，下面全光滑，沿叶边略有疏长毛。孢子囊羣圓形，中等大，接近，每裂片 6—9 对，背生于側脉基部，紧靠主脉两側各成 1 行，被毛。

产四川峨眉山及东南部（南川，大合垻）、台湾南部（阿里山，溪头）。生林下沟中，海拔 720—1500 米。

本种形体和叶脉极似方稈蕨（*Glaphylopteridopsis erubescens* [Wall.] Ching），但孢子囊羣有灰白色密毛，側脉細而較显突，可能是它和粉紅方稈蕨（*Glaphylopteridopsis rufostraminea* [Christ] Ching）的杂交种，但在主要特征方面，更傾向于前者。

***Glaphyropteridopsis eriocarpa*** Ching, sp. nov.

Habitu generali speciei praecedentis a qua differt praesertim pinnis facie inferiore pilis longis albo-griseis, tenuibus sat dense obtectis et soris pilis similibus densissime intermixtis.

**Szechuan:** Nanchuan Hsien, Ching-fo Shan, *K. F. Li* (李国凤) *61302* (type); Mt. Omei, *W. P. Fang* (方文培) *2610*, in thickets, alt. 950 m, 6, VIII, 1928.

3. ***Glaphyropteridopsis rufostraminea*** (Christ) Ching, comb. nov.

Basionym: *Aspidium rufostramineum* Christ, Bull. Soc. Bot. France LII, Mém. 1 (1905) 36.

Synonym: *Thelypteris rufostraminea* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 291.

本种植物仅产我国四川、貴川及湖北西部，在峨眉山海拔 1000 米左右的疏林边緣极为普遍。

**3. 大叶方稈蕨**　新种

植株高約 1.2 米。根状茎粗大，横臥，近木質，光滑。叶近生，柄长达 50 厘米，粗約 4.5 毫米，有深沟稜，光滑，禾稈色；叶片长約 80 厘米，寬 28 厘米，狭长圓形，先端漸尖，并为羽裂，基部不变狹，二回深羽裂几达羽軸；羽片約 30 对或更多，对生或近对生，无柄，相距 2.5—3 厘米，以鈍角自叶軸分出，斜展，下部数对以直角分出，平展，不縮短，中部羽片长达 21 厘米，寬 2.5 厘米（基部寬 3.5 厘米），綫状披針形，长漸尖头，基部对称，上側平截，紧靠叶軸，下側圓形，羽裂几达羽軸；裂片 35—40 对，近平展，披針形，略呈鐮刀状，长 1.2 厘米（基部一对特长，1.6—2 厘米），寬約 4 毫米（向基部漸变寬），向頂端漸变狹，尖头，全緣，有狹长的倒三角形缺刻分开。叶脉可見，每裂片約有 14 对，单一，斜上，基部一对出自主脉基部，向上伸达缺刻以上甚远。叶为薄草質，干后綠色，羽片上面仅沿羽軸被密柔毛，下面沿微紅色羽軸有灰白色細长毛，沿主脉和側脉的毛較短而疏；叶軸禾稈色，光滑，方形。

孢子囊羣圓形,中等大,接近,每裂片 10—12 对,背生于側脉基部,紧靠主脉两側各成 1 行,有較多的刚毛。

特产于四川峨眉山(朝阳洞附近)。生林下岩石上,海拔 560 米。

本种的一些特征頗近粉紅方稈蕨 (*Glaphylopteridopsis rufostraminea* [Christ] Ching) 但形体远較高大,羽片較闊,裂片細长,尖头,下面略具长毛,在形体上极似方稈蕨(*Glaphylopteridopsis erubescens* [Wall.] Ching),但叶为薄草质,下面有毛,裂片基部一对叶脉向上伸达缺刻以上甚远,可能是二者的杂交种,但亲緣关系更接近前者。

***Glaphyropteridopsis splendens*** Ching, sp. nov.

Species inter *G. erubescentem* (Wall.) Ching et *G. rufostramineam* (Christ) Ching media tenens, a priore differt praesertim lamina textura tenuiore, venulis infimo jugo ad marginem supra sinum extensis, facie inferiore densius hirsutis; a posteriore multo majore, pinnis numerosis, approximatis, usque ad 21 cm vel ultra longis, basi 2.5 cm latis, apice longe acuminatis, subtus tantum sparse hirsutis, segmentis majoribus, falcatis, apice acutis.

**Szechuan:** Mt. Omei, Chiao-yang-tung, *S. C. Cheng* (郑学經) *10016*, (type), under forest, alt. 560 m, 20, VIII, 1953. rare.

The above 4 species are all found growing together in the Mt. Omei, and, judging from the expressions of their external morphology, it may be presumed that the second and the fourth species seem to be hybrids between the other two species, which grow very extensively and luxuriantly in the locality, while the two new species are found rather rare. Cytological study will some day solve the riddle of their inter-relationships.

## 12. 假毛蕨屬 (*Pseudocyclosorus* Ching), 新属

本属植物在形体和羽裂图式方面一如毛蕨属 (*Cyclosorus*),其不同点在于叶片近革质或厚紙质,向頂部不突然变狹为长尾状,而通常为漸尖头,深羽裂,叶柄光滑无毛,罕被疏短毛,下面不具腺体,两面无毛或略有疏毛,羽片深裂达离羽軸不远处,下部的通常逐漸縮短成小耳片或突然退化为瘤状,叶軸在羽軸着生处的下面常有 1 个瘤状突起的褐色气囊体,叶脉分离,小脉粗壮,下面隆起,裂片基部一对叶脉或伸达軟骨质的圓形缺刻,但从不靠合,或者通常仅上側一脉伸达缺刻,而下側一脉則伸至缺刻以上的叶边;孢子囊羣有盖,盖近革质,棕色,光滑或偶有毛;孢子两面型,卵圓形,表面有刺状突起。

属的模式: **假毛蕨 *Pseudocyclosorus xylodes*** (Kunze) Ching.

約有 50 种,分布于世界热带和亚热带,中国現知有 27 种,产云南、广东、广西、福建、台湾和江西、浙江南部;向西达緬甸、喜馬拉雅。

## 12. *Pseudocyclosorus* Ching, gen. nov.

*Thelypteris* subgenus *Euthelypteris* Ching, *group* 8 Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 247.

*Glaphyropteris* sect. *Euglaphyropteris* H. Ito in Nakai et Honda, Nova Flora Japonica

no. 4 (1939) 146, pro parte.

Genus novum dimensione et configuratione divisionis *Cyclosoro* Link valde simile, a qua differt lamina textura subcoriacea vel firme chartacea, utrinque nuda vel perparce villosa, facie inferiore glandulis globosis, auratis destituta; pinnis inferioribus deorsum plerumque gradatim abbreviatis, infimis saepe in tubercula reductis, basi subtus ad insertionem secus rachin aerophoris magnis, prominentibus, nigrescentibus praeditis; venulis in segmentis semper liberis, crassis, subtus elevatis, infimo jugo ad sinum callosum protensis sed haud exacte conniventibus vel junctis, aut saepe venula anteriore solum ad sinum valde oblique protensa et posteriore marginem supra sinum attingente; soris indusiatis, indusiis magnis, brunneis, firme chartaceis, plerumque nudis vel interdum perparce breve villosis persistentibus.

Ca. 50 species late per totum orbem in regionibus tropicis dispersae.

Typus generis: ***Pseudocyclosorus xylodes*** (Kunze) Ching (basionym: *Aspidium xylodes* Kunze, Linnaea XXIV [1851] 283).

According to Manton and Sledge[29], both *Thelypteris xylodes* (Kunze) Ching and *T. ciliata* (Wall.) Ching have a chromosome number $n = 36$.

In spite of the somewhat intermediate nature of the venation pattern between *Cyclosorus* Link and *Thelypteris* (sensu lato), *Pseudocyclosorus* Ching is a very natural group of the thelypteroid ferns, which I recognized as early as 1940 in my monograph. However, in recent years, some pteridologists have suspected the generic distinctness of *Cyclosorus* Link from *Thelypteris* (sens. lat.), while a few others actually combined the two genera together under *Thelypteris,* simply because of the presence of the alleged intermediate venation pattern, as exhibited by *Thelypteris xylodes* (Kunze) Ching and its allies. And there are still a few, who, while maintaining *Cyclosorus* Link as distinct, are inclined to transfer some of the free-veined species to *Thelypteris,* but the present writer, on the contrary, considers it proper to segregate *Thelypteris xylodes* and its allies as a distinct genus both from *Thelypteris* and *Cyclosorus,* because of the constant morphological characters as diagnosed above.

Incidentally, it may be pointed out that a small group of American species, as represented by *Dryopteris patens* (Sw.) O. Ktze. and *D. normalis* (Sod.) C. Chr. also with quite the same type of venation as that of *Thelypteris xylodes,* is in my mind referable to *Pseudocyclosorus* rather than to *Thelypteris* or *Cyclosorus,* for the basal pair of veins of the adjacent groups in these species are not actually united, nor is there the characteristic transluscent sinus-membrane between the adjacent lobes as is found in true *Cyclosorus* Link. However, they differs somewhat from *Cyclosorus* in the absence of aerophores at the insertion of pinnae underneath and also in more villose leaves. The systematic position of these ferns requires further study.

The following species known from the mainland of Asia are here referred to the

present genus.

1. ***Pseudocylosorus xylodes*** (Kunze) Ching, comb. nov. **假毛蕨**

Basionym: *Aspidium xylodes* Kunze, Linnaea XXIV (1851) 283.

Synonym: *Thelypteris xylodes* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 296.

本种广布于中国南部;也布于印度支那、緬甸、印度及錫兰等地。

2. ***Pseudocyclosorus tuberculiferus*** (C. Chr.) Ching, comb. nov. **瘤羽假毛蕨**

Basionym: *Dryopteris tuberculifera* C. Chr. Contr. U.S. Nat. Herb. XXVI (1931) 275.

Synonym: *Thelypteris tuberculifera* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 295.

本种广布于我国云南、广西及广东南部;也产越南北部。

3. ***Pseudocylosorus falcilobus*** (Hook.) Ching, comb. nov. **鐮片假毛蕨**

Basionym: *Lastrea falciloba* Hook. Journ. Bot. IX (1856) 337.

Synonym: *Thelypteris falciloba* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 298.

本种广布于亚洲热带和亚热带地区,在我国南部也常見。

4. ***Pseudocyclosorus repens*** (Hope) Ching, comb. nov. **喜馬拉雅假毛蕨**

Basionym: *Nephrodium repens* Hope, Journ. Bomb. Nat. Hist. Soc. XXI (1899) 535.

Synonym: *Thelypteris repens* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 304.

本种产我国云南西北部;也产于緬甸北部,向西达喜馬拉雅山区。

5. ***Pseudocyclosorus esquirolii*** (Christ) Ching, comb. nov. **西南假毛蕨**

Basionym: *Dryopteris esquirolii* Christ, Bull. Acad. Géogr. Bot. Mans (1907) 144.

Synonym: *Thelypteris esquirolii* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 301.

本种广布于我国西部及西南部;印度支那、緬甸及印度也产之。

6. ***Pseudocyclosorus duclouxii*** (Christ) Ching, comb. nov. **蒼山假毛蕨**

Basionym: *Dryopteris duclouxii* Christ, Bull. Acad. Géogr. Bot. Mans (1907) 139.

Synonym: *Thelypteris duclouxii* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 303.

本种特产我国云南南部(大理)。

7. ***Pseudocyclosorus ciliatus*** (Wall.) Ching, comb. nov. **溪边假毛蕨**

Basionym: *Aspidium ciliatum* Wall. ex Benth. Fl. Hongk. (1861) 455.

Synonym: *Thelypteris ciliata* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 289.

本种广布于热带亚洲,在我国南部及沿海島屿极为常見。

8. ***Pseudocyclosorus latilobus*** (Ching) Ching, comb. nov. **闊片假毛蕨**

Basionym: *Thelypteris latiloba* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 303.

本种特产我国貴州。

9. ***Pseudocyclosorus caudipinnus*** (Ching) Ching, comb. nov. **尾羽假毛蕨**

Basionym: *Thelypteris caudipinna* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 288.

本种特产我国海南島。

10. ***Pseudocyclosorus subochthodes*** (Ching) Ching, comb. nov. **普通假毛蕨**

Basionym: *Thelypteris subocthodes* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 305.

Synonym: *Glaphyropteris falciloba* H. Ito. in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 147, pro parte.

本种广布于我国东部、中部及南部；也产于日本、印度支那、緬甸。

### 13. ***Mesoneuron*** Ching, gen. nov.

Genus novum venatione *Pseudocyclosori* Ching ei simile, a quo differt rhizomate repente, crasso, frondibus remotis, saepe subdimorphis, lamina crassius coriacea vel subcoriacea, in statu sicco obscure brunnea, pinnis lateralibus praesertim inferioribus saepe longe petiolatis, ad basin aliquantum angustatis sed haud abbreviatis, ad insertionem basis secus rachin aerophoris prominentibus nullis; venatio more *Pseudocyclosori* venis infimo jugo in sinum callosum plus minusve conniventibus sed nunquam junctis, omnibus e costulis segmentorum et praeterea basali posteriore e costa pinnae fere inter duas costulas egredientibus; soris indusiis parvis vel fugaceis praeditis.

Ca. 12 species in Malesia-Polynesia dispersae.

Typus generis: ***Mesoneuron crassifolium*** (Bl.) Ching (basionym: *Aspidium crassifolium* Bl. Enum. Pl. Jav. [1828] 158).

According to Manton (in Holttum, Ferns of Malaya 624), both *Thelypteris crassifolia* and *T. paleata* have a chromosome number n = 72, which is the same for *Cyclosorus* Link and *Pseudocyclosorus* Ching.

This small group of about a dozen of species endemic in the Malesian-Polyneisan regions is peculiarly distinct from other genera of the family by the characters diagnosed above, its relationship, however, with *Cyclosorus* and especially with *Pseudocyclosorus* being without doubt.

本新属产于馬来亚和玻里尼西亚，尚未在亚洲大陆发現。它在分类位置上，最近于假毛蕨属 (*Pseudocylosorus*)，但根状茎横走，叶远生，近二型，革質，下部羽片有长柄，从不縮短，与叶軸着生处也无气囊体，裂片上的基部 1 对叶脉的下侧 1 条出自羽軸，从不出自主脉的基部，囊羣盖小或不甚发育，故易区别。

約有 10 余种，分布在南太平洋島屿。以下是熟知的一些种类。

The following species known to me are referred to the present genus:

1. ***Mesoneuron crassifolium*** (Bl.) Ching, comb. nov.

Basionym: *Aspidium crassifolium* Bl. Enum. Pl. Jav. (1828) 158.

Synonym: *Thelypteris crassifolia* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 285.

本种特产馬来亚。

2. ***Mesoneuron chlamydophoron*** (Rosenst.) Ching, comb. nov.

Basionym: *Dryopteris chlamydophora* Rosenst. Med. Rijks Herb. Leiden XXXI

(1917) 5.

Synonym: *Thelypteris chlamydophora* Ching, Bull. Fan Mem. Inst. Biol. VI (1936) 287.

本种产于馬来亚、加里曼丹、苏門答腊。

3. ***Mesoneuron motleyanum*** (Hook.) Ching, comb. nov.

Basionym: *Nephrodium motleyanum* Hook. Syn. Fil. (1867) 266.

Synonyms: *Thelypteris motleyana* Holttum, Ferns of Malaya (1954) 247.

*Thelypteris crassifolia* var. *motleyana* Ching, Bull. Fan Mem. Biol. VI (1936) 286.

本种产于加里曼丹、苏門答腊、馬来亚。

4. ***Mesoneuron paleatum*** (Cop.) Ching, comb. nov.

Basionym: *Dryopteris paleata* Cop. Philip. Journ. Sci. IX (1914) 228.

Synonym: *Thelypteris paleata* Holttum, Ferns of Malaya (1954) 249.

本种广布于加里曼丹、苏門答腊、馬来亚。

5. ***Mesoneuron echinatum*** (Mett.) Ching, comb. nov.

Basionym: *Aspidium echinatum* Mett. Ann. Mus. Lugd. Bat. I (1864) 230.

本种特产于伊里安。

6. ***Mesoneuron trichopodium*** (C. Chr.) Ching, comb. nov.

Basionym: *Dryopteris trichopoda* C. Chr. Ind. Fil. (1905) 298.

本种特产伊里安。

7. ***Mesoneuron hallieri*** (Christ) Ching, comb. nov.

Basionym: *Aspidium hallieri* Christ, Ann. Jard. Bot. Buit. sér. 2, XX (1905) 106.

本种特产加里曼丹。

8. ***Mesoneuron persquamiferum*** (v. A. v. R.) Ching, comb. nov.

Basionym: *Dryopteris persquamifera* v.A.v.R. Bull. Jard. Bot. Buit. sér. XVI (1914) 10.

本种特产苏拉威西。

9. ***Mesoneuron teuscheri*** (v. A. v. R.) Ching, comb. nov.

Basionym: *Dryopteris teuscheri* v.A.v.R. Bull. Dept. Agri. Néerl. XVIII (1908) 6.

本种特产加里曼丹。

10. ***Mesoneuron attenuatum*** (Fée) Ching, comb. nov.

Basionym: *Nephrodium attenuatum* Fée. Gen. Fil. (1850—52) 305, nom. nud.; Hook. et Bak. Syn. Fil. (1867) 263, *new name.*

Synonyms: *Lastrea attenuata* J. Sm. Journ. Bot. III (1841) 412, nom nud., non Brack. 1854.

*Dryopteris attenuata* O. Ktze. Rev. Gen. Pl. II (1891) 218.

*Dryopteris stenobasis* C. Chr. Ind. Fil. (1905) 294.

本种广布于菲律宾、苏拉威西、伊里安。

### 14. 毛蕨属（*Cyclosorus* Link）

通常为中形的陆生林下植物。根状茎横走，或长或短，少有为直立的圓柱形，疏被鱗片；鱗片披針形或卵状披針形，厚厚，通常多少被短刚毛，全緣，但往往有刚毛状的疏睫毛。叶疏生或近生，少有簇生，有柄，叶柄长或短，淡綠色，干后禾稈色或淡灰色，基部疏被同样的鱗片（很少密生或向上分布），但通体照例有灰白色单細胞針状毛或柔毛。叶片长圓形、三角状长圓披針形或倒闊披針形，頂端漸尖，或通常突然收縮成尾状的羽裂的頂生羽片，基部闊或逐漸变狹，沿叶面下面不具瘤状褐色气囊体，二回羽裂或罕为一回羽状，頂部羽裂，漸尖头，側生羽片通常 10—30 对或較少，狹披針形或綫状披針形，寬 1—3 厘米，有时較狹，无柄或偶有极短柄，頂部长漸尖，基部截形、斜截形或为圓楔形、或漸变狹，下部羽片往往縮短或变成耳形（有时退化成气囊体），羽裂从 1/5 到达羽軸两側的狹翅（罕有近全緣）；裂片多数，呈篦齿状排列，鐮状披針形或三角状披針形至长方形，全緣（罕有少数鋸齿），鈍头或尖头，基部一对特別是上側一片往往較长。叶脉在裂片上单一（偶有二叉），明显，斜上，通直或微向上弯，相邻裂片間的基部一对側脉的頂端彼此交結成鈍的或尖的三角形网眼（以羽軸为底），并自交結点伸出 1 条外行小脉，直达有軟骨組織的缺刻或停留于缺刻下的一条长透明膜的底部，第二对或多对（多至 4 对，偶达 5 对）側脉的頂端同样交結，而且常和外向小脉（venatio goniopteroidis）相遇，更向上的側脉或均伸达叶边，或部分的与缺刻下长透明薄膜相遇（但彼此的頂端并不交接），或伸至缺刻內的軟骨組織（此軟骨組織常突出或在下面多少折迭成龙骨瓣形）。叶质变化甚大，自草质自厚紙质，干后淡綠色或罕为黃綠色，两面或至少叶軸、羽軸、主脉及叶肉上面多少被有灰白色、单細胞的針状毛，下面往往有疏或密的橙黃色无柄的球圓形腺体。孢子囊羣大，圓形，背生側脉中部（罕有生于側脉基部或頂部），照例有囊羣盖，盖为圓腎形，质頗坚厚，棕色或褐棕色，宿存，罕有早消失，上面往往多少被粗短伏毛或柔毛，也常有腺体。孢子囊光滑或偶有一二刚毛；孢子两面型，长圓腎形，半透明，表面有疣状突起。

属的模式：***Cyclosorus gongylodes*** (Schkuhr.) Link.

为金星蕨科最大的属，約有 250 种，广泛分布于世界各地热带和亚热带，尤以亚洲种类最多，中国现知有 140 余种，为世界分布中心。

本属为一自然羣，易与新月蕨属（*Abacopteris*）和假毛蕨属（*Pseudocyclosorus*）区别，但也有一些学者（如法国 Tard.-Blot in Fl. Indo-Chine VII, ii [1941] 389）把本属与新月蕨属合并成一属，也有（如美国 C. V. Morton in Amer. Fern Journ. XLIX [1959] 113—134）把这两属都列为 *Thelypteris*，其主要理由是存在着中間类型的叶脉，其实叶脉交結情形只是分属的一个标准，此外在羽片基部下面有无气囊体，羽片下面有无腺体，叶脉結合图式的不同，缺刻內有无透明膜质或是有軟骨质、孢子形态以及染色体数目等方面都有所不同，在理論上必須分別对待，在实际应用上也以分立为方便。

Subtribe ii. **Cyclosorinae** Ching

14. ***Cyclosorus*** Link

Link, Hort. Berol. II (1833) 128; Ching, Bull. Fan Mem. Inst. Biol. Bot.

Ser. VIII (1938) 162—231; C. Chr. in Verdoorn, Manual of Pteridology (1938) 545.

*Dryopteris* subgenus *Cyclosorus* C. Chr. Ind. Fil. (1905) 250, pro parte; Arbejder lilegnede Eug. Warming (1911) 81; Vid. Selsk. Skr. VII (1912) 174; VIII (1920) 81.

Type of the genus: ***Cyclosorus gongylodes*** (Schkuhr.) Link (basionym: *Aspidium gongylodes* Schkuhr. Crypt. Gew. I [1809] 193, t. 33C).

As a very natural genus, *Cyclosorus* Link is now the largest taxon with about 250 pantropical species of the thelypteroid ferns, which may be easily distinguished from the phyletically related genus *Pseudocyclosorus* Ching by the leaves generally of soft texture, by the presence of generally dense gray hairs on both sides of the leaves as well as on the indusia and of the bright-colored globose or rarely rod-like sessile glands on the under side of the leaves, by the absence of prominent dark-colored aerophores along the rachis at the insertion of pinnae underneath, by the lower pinnae generally gradually shortened, or even reduced to small auricles, and, above all, by 1—3 (4 or rarely 5) pairs of the lower veins in the adjacent lobes actually united at the apices usually with an excurrent veinlet *some distance* below an elongate, transluscent narrow sinus-membrane between two adjacent lobes, which often forms a "kell" on the under side upon drying. The presence of the hyaline sinus-membrane, the importance of which was already discussed at length in my monograph, and lately further expounded by Holttum (The Ferns of Malaya, p. 255) together with the goniopteroid type of anastomosing venation constitutes one of the most reliable characters by which the genus *Cyclosorus* Link is separated from *Pseudocyclosorus* Ching or *Abacopteris* Fée, with both of which it has been confused by fern students in the past.

According to Manton and Sledge, *Cyclosorus* Link has a chromosome number n = 36, the same number being recorded by her for *Pseudocyclosorus* Ching, and also for *Abacopteris* Fée.

1. ***Cyclosorus procurrens*** (Mett.) Ching, comb. nov. **无腺毛蕨**

Basionym: *Aspidium procurrens* Mett. Ann. Mus. Lugd. Bat. (1864) 231.

Synonyms: *Nephrodium procurrens* Bak. in Hook. et Bak. Syn. Fil. (1867) 290.

*Dryopteris procurrens* O. Ktze. Rev. Gen. Pl. II (1891) 813; C. Chr. Ind. Fil. (1905) 286.

本种产我国台湾、海南島、云南南部；也广布于印度支那、緬甸、泰国、印度南部、錫兰、馬来亚、玻里尼西亚。

This species is specifically distinct from *C. parasiticus* (L.) Farwell by ampler size of fronds, by the absence of orange-colored glands on the under side of pinnae, which is clad in much longer and denser gray needle-like hairs.

### 15. 溪边蕨属（*Stegnogramma* Bl.）

中等大的陆生植物。根状茎短，直立或斜升，略被鳞片，鳞片闊披針形，棕色，厚厚，背面有刚毛。叶簇生，有柄，柄深禾稈色，基部略被鳞片，并有灰白色透明針状长毛（由6—8个細胞組成），并有明显的分隔；叶片长圓披針形或闊披針形，漸尖头并为深羽裂，基部不变狭或略变狭，一回羽状；羽片10对上下，开展，无柄，或仅下部2—4对有短柄，向上多少与叶軸合生，披針形或卵状披針形，短漸尖或鈍头，基部圓截形，近对称，边緣呈波状、圓齿状或羽裂深达1/3，两面多少被毛，羽軸明显，下面隆起，上面有1条浅縦沟，密被針状毛。叶脉3—5对，斜上，星毛蕨型，即下部1—3(—5)对頂端联結成三角形或四角形网眼，基部一对出自主脉基部以上，上部叶脉伸达叶边或不具膜质的缺刻。叶为草质，干后褐綠色，遍体被灰白色粗毛，叶軸上的毛有时长而开展，由6—8个細胞組成。孢子囊羣长形或綫形，着生側脉上，无盖，孢子囊上有少数直立短毛；孢子两面型，腎形，表面有疣状突起。

属的模式：***Stegnogramma aspidioides*** Bl.

現知10余种，形体上彼此极相似，主产我国西南部，向南經印度、緬甸、越南达南洋羣島，我国現知10种，为本属分布中心。

本属在孢子囊羣形体上极似伕蕨属（*Leptogramma*），但叶脉联接成星毛蕨型 venatio goniopteroidis；在脉型上同毛蕨属（*Cyclosorus*），但孢子囊羣不为圓形而为綫形，无盖，叶柄和叶軸上的毛細长，开展，透明，由6—8个細胞組成，并有明显的分隔，先端往往呈鉤状，孢子囊頂端有几根直立的刚毛，故易区别。

### 15. *Stegnogramma* Bl.

Bl. Enum. Pl. Jav. (1828) 172; Presl, Tent. Pterid. (1936) 5, t. 9, f. 5; Ching, Bull. Fan Mem. Inst. Biol. VII (1936) 90.

Type of the genus: ***Stegnogramma aspidioides*** Bl. Enum. Pl. Jav. (1828) 172.

A small genus of about 10 species mostly endemic in China; its relationship to *Cyclosorus* Link on the one hand, is too obvious to need further comment, from which it differs technically in the absence of a sinus-membrane between adjacent segments, in the linear exindusiate sori which are often setose hairy, in the long multicellular, septate (6—8 cells) hairs often with hooked apices, and in the sporangia being provided with 2—4 setose hooked hairs near the top of the capsules. On the other hand, its affinity to *Dictyocline* Moore through *S. dictyoclinioides* Ching is also clearly evident. Except for the elongate sori, *Stegnogramma* Bl. seems to be phyletically remote from *Leptogramma* J. Sm. from which the genus differs, technically, in the goniopteroid venation.

### 16. 星毛蕨属（*Ampelopteris* Kunze）

中等大的曠野湿地植物。根状茎长而横走，光滑或略被鳞片，鳞片小，披針形，背面略被单細胞有柄的星状分叉細毛。叶簇生或近生，柄禾稈色或深禾稈色，坚硬，光滑，有縦沟

脊，叶片为无限生长（即从羽片腋間的鱗芽无限地和不規則地生长1簇小叶片），一回羽状，叶軸上部往往伸长成鞭状，并有小羽片，頂端能着地生根，产生新株，羽片4—10对上下，平展，互生或近对生，略有短柄，披針形，短漸尖头，长約4—9(—14)厘米，寬1—1.5厘米，边緣波状或略具圓齿，基部近截形，有时略呈心脏形，对称。羽軸明显，下面隆起，圓形，上面有1条狹糾沟，光滑无毛，側脉明显，斜展，小脉也明显，斜上，頂端均彼此联結，并自联結点有1条曲折外行小脉伸达叶边的浅缺刻(缺刻不具軟骨質組織)。叶为坚草質或紙質，干后淡綠色，遍体光滑无毛，仅在叶軸下部（有时上部）或叶腋間有少数易脫落的有柄的单細胞星状分叉的微毛，此外在叶軸、羽軸及主脉下面或叶边有时可見較长的針状单毛。孢子囊羣圓形或长圓形，无盖，生于側脉中部背上，成熟时往往汇合，复盖叶的下面，孢子囊光滑无毛，孢子两面型，腎形，透明，表面除具小疣状突起外，有翅状周壁。

属的模式：***Ampelopteris prolifera*** (Retz.) Cop.

仅有1种，广布于热带亚洲、非洲和澳洲，但不产于美洲，在这里有相近的一属 *Goniopteris* Presl 代替它。

本属与毛蕨属（*Cyclosorus*）的亲緣关系最为密切，其主要区别在于根状茎的鱗片、叶軸和腋芽往往有具短柄的分叉或星芒状的单細胞短毛，在羽片腋間有胎生鱗芽，能发出次生叶片，叶軸先端延伸成鞭状，能着地生根，产生新株，小脉先端几全部彼此交接以及羽片边緣的缺刻内不具透明的膜質。

### Subtribe iii. **Goniopteridinae** Ching

### 16. ***Ampelopteris*** Kunze

Kunze, Bot. Zeit. VI (1848) 114; Cop. Gen. Fil. (1947) 143; Holttum, Ferns of Malaya (1954) 298.

*Dryopteris* subgenus *Goniopteris* C. Chr. Fil. (1905) 250, pro parte.

*Goniopteris* auct., non Presl, 1836.

*Meniscium* sect. *Goniopteridopsis* H. Ito in Nakai et Honda, Nova Flora Japonica no. 4 (1939) 186.

Type and sole species: ***Ampelopteris prolifera*** (Retz.) Cop. Gen. Fil. (1947) 144 (basionym: ***Hemionitis prolifera*** Retz. Obs. Bot. VI [1791] 36.).

As a valid genus, *Ampelopteris* is most closely related to and more advanced than, *Cyclosorus* Link, from which it can be distinguished by the proliferous fronds of indefinite growth, by the elongate or roundish exindusiate sori, by lacking sinus-membrane and by the presence of branched unicellular hairs on the scales of the rhizome and stipes as well as on the upper surface of the rachis and costa. *Ampelopteris* Kunze is wide spread throughout the tropics of the Old World, while *Goniopteris* Presl is a genus of some 70 species, all endemic in the tropical Americas.

According to Manton and Sledge, *Ampelopteris prolifera* (Retz.) Cop. has a chromosome number n = 36.

## 17. 新月蕨属 (*Abacopteris* Fée)

中等大的植物。根状茎长而横走，略被常带毛的棕色披針形的鱗片。叶远生或近生，有柄，基部以上无鱗片，但經常（特別在幼时）多少被单細胞的針状毛；叶片单一或三出，但通常为一回奇数羽状；羽片 3—10 对，基部一对不縮短或稍縮短，披針形，漸尖头，基部圓形或楔形，几无柄或有短柄，不与叶軸合生，全緣或有粗鋸齿，羽軸明显，側脉多对，相距 4—8 毫米，斜展，并行，叶脉为新月蕨型，卽小脉在側脉之間形成斜方形网眼，直达叶边，自二小脉交結点发出的外行小脉或为連續或断續，頂端有 1 水囊。叶草質或紙質，間为革質、干后綠色或褐色，常飾有紅暈（至少在叶軸、羽軸或側脉下面），照例多少被有針状毛（至少沿叶軸及羽軸上面基部），叶肉下面經常有小而密的疣状突起。孢子囊羣圓形，在側脉間排成 2 行，背生于小脉中部（每脉 1 枚），如生于小脉上部則成熟时往往汇合为新月形，罕有滿鋪羽片下面，无盖或罕有盖，但孢子囊頂部往往有 1 根至多根的指向上方的針状毛；孢子两面型，腎形，表面有疣状突起或少有狹翅状周壁。

属的模式：***Abacopteris lineata*** (Bl.) Ching

約有 35 种，分布于亚洲热带和亚热带地区，我国現有 16 种，主产南岭以南及云南南部，向北可达四川（重庆，北碚，縉云山）。

为一自然的属，显然由毛蕨属（*Cyclosorus*）演化而来，所不同的是較簡单的一回奇数羽状的叶片，羽片一般少而大，全緣或稍有粗鋸齿（但缺刻下从不具透明膜），下面有小而密的疣状突起，小脉除近叶边的几对外，全部交接成新月蕨型或星毛蕨型的四方或斜方形网眼，孢子囊羣通常不具盖。

### Subtribe iv. **Menisciinae** Ching

### 17. ***Abacopteris*** Fée, emend. Ching

Fée, Congr. Sci. de France X$^{me.}$ sess. I (1843); Gen. Fil. (1850—52) 309, t. XVIII c. G. CXLII, f. 1; Ching, Bull. Fan Mem. Inst. Biol. Bot. Ser. VIII (1938) 230. Holttum, Ferns of Malaya (1954) 285.

*Meniscium* C. Chr. Ind. Fil. (1905) 250, pro parte.

*Dryopteris* subgenus *Abacopteris* C. Chr. Gard. Bull. Str. Settl. VII (1934) 247.

*Polypodium* Presl, Rel. Haenk. I (1825) 24, t. 3, f. 4; Hook. Sp. Fil. V (1863) 12; Hook. et Bak. Syn. Fil. (1867) 361.

*Meniscium* sect. *Eumeniscium* H. Ito in Nakai et Hondo Nova Flora Japonica no. 4 (1938) 181.

Type of the genus: ***Abacopteris lineata*** (Bl.) Ching in Holttum, Ferns of Malaya (1954) 293 (basionym: *Aspidium lineatum* Bl. Enum. Pl. Jav. [1828] 144).

The genus *Abacopteris* Fée is characterized by impari-pinnate frond usually with a few (1-3-7) pairs of entire or crenate, broad pinnae, of which the basal ones not reduced, by lacking hyaline sinus-membrane, by all veins anastomosing, except a few distal ones on the basiscopic side of the costule, with the excurrent veinlet formed by the union of

veins from adjacent groups free or united to the many vein-pairs next above, by the under surface generally verrucose and together with rachis and costa often turning reddish when dried, and by the sori without indusium or only with very small fugaceous vestige of it. Unicellular hairs frequent, which are usually hooked, curved and spreading.

*Abacopteris* may be considered as one of the most advanced groups of the thelypteroid ferns by a few large almost entire pinnae through reduction, by an elaborate type of venation and by the exindusiate sori (sometimes with vestiges of indusia). Some pteridologists do not accept *Abacopteris* Fée as a generic entity and consider it as *Cyclosorus* Link, while still others even not recognize *Cyclosorus* Link as a natural genus and combine it with *Thelypteris* Schmidel. Personally, I do not agree with both of them, for the reasons already set forth above.

According to Manton and Sledge, *Abacopteris* Fée has a chromosome number $n = 36$.

Closely related to the present genus of Asia is *Meniscium* Schreber of the tropical Americas.

1. ***Abacopteris aspera*** (Presl) Ching, comb. nov. **新月蕨**

Basionym: *Goniopteris aspera* Presl, Tent. Pterid. (1836) 183.

Synonyms: *Polypodium asperum* Presl, Rel. Haenk. (1825) 24, t. 3, f. 4, non Linn. 1753.

*Dryopteris presliana* Ching in C. Chr. Ind. Fil. Suppl. III (1934) 95, *superflous name.*

*Abacopteris presliana* Ching, Bull. Fan Mem. Inst. Biol. Bot. Ser. VIII (1938) 248.

*Dryopteris urophylla* C. Chr. Ind. Fil. (1905) 299, pro parte; Merr. Enum. Hainan Plants in Lingnan Sci. Journ. V (1927) 9.

本种广布于热带亚洲，在我国产于台湾、海南島、广东、广西、云南及貴州南部，常羣生林下。

## 18. 圣蕨属 (*Dictyocline* Moore)

中等大的陆生植物。根状茎短而直立或斜升，連同叶柄基部疏被鱗片，鱗片披針形，褐色，厚質，边緣有針状刚毛。叶簇生，柄灰禾稈色，粗約 2 毫米，上面有 1 条浅縱沟，遍体被毛；叶片长圓形，三角形至截形，先端漸尖，并多少羽裂，一回羽状或羽裂或单叶，基部心脏形。如为羽状则有 1—6 对羽片，羽片闊披針形，漸尖头，基部圓形，对称，全緣，分离或合生，斜展，羽軸两面隆起，側脉明显，斜上，直达叶边，中間小脉网状，粗而明显，网眼3—4排，略呈四角至五角形，无內藏小脉或有单一或分叉的內藏小脉。叶为紙質，干后褐色，粗糙，两面被先端呈鈎状的粗毛。孢子囊羣綫形，无盖，生于小脉上，連接成网状；孢子囊近頂部有直立的針状刚毛；孢子两面型，腎形，表面有疣状突起。

属的模式：**圣蕨** ***Dictyocline griffithii*** Moore.

本属过去一直認为是单种属，經研究，現知有 4 种，特产我国长江以南各省，向东至日本，西至印度，南至越南。生林下或蔭湿处。

本属在分类位置上是金星蕨科中最突出的一属，与溪边蕨属（*Stegnogramma*）最为密切，但叶片分裂度小或几不分裂，羽片少数或无，全緣，小脉为网状，网眼多而密，呈四角或五角形，孢子囊羣也連成网状，沿叶脉着生，故易区别。

## Tribe III. **Dictyoclineae** Ching

### 18. ***Dictyocline*** Moore

Moore, Gard. Chron. (1855) 854; Ind. Fil. (1857) LIX; J. Sm. Hist. Fil. (1875) 149.
*Hemionitis* Hook. Fil. Exot. (1859) t. 93, non Linn. 1753.
*Aspidium* C. Chr. Ind. Fil. (1905) 76, pro parte, non Sw. 1801.

Type of the genus: ***Dictyocline griffithii*** Moore.

*Dictyocline* Moore is the most peculiarly distinct genus of the thelypteroid ferns and, seeing that the much less divided or even simple fronds with highly elaborate reticulate venation of the tectarid type and the absence of the definite sori, seems in all probability to represent a highly advanced level of evolution the family *Thelypteridaceae* has ever reached. Because of its tectarid type of venation, it was long treated by old pteridologists with *Aspidium*, but its affinity with the thelypteroid ferns can hardly be questioned, especially its relationship with *Stegnogramma* Bl. through *S. dictyoclinioides* Ching from Yunnan being, indeed, quite definite.

*Dictyocline* has hitherto been considered as a monotypic genus, but now it has been found to be a genus of four well-defined species endemic in China, with one or two ranging as far as Japan and the Himalayas.

I refrain from agreeing with Iwatsuki (Acta Phytotax. et Geobot. XIX [1963] 112) upon reducing *Dictyocline* Moore and *Leptogramma* J. Sm. as sections of *Stegnogramma* Bl., for morphologically, they are distinct from one another.

For the sake of completeness, I enumerate below all the species so for known of the genus:

1. ***Dictyocline griffithii*** Moore, Gard. Chron. (1855) 854. **圣蕨**

本种广布于我国西部及西南部，向西經緬甸北部达喜馬拉雅山区，向南达印度支那，向东到日本。

**2. 閩浙圣蕨**　新种

植株高約 50 厘米左右，根状茎短而斜上，密被紅棕色披針形有刚毛的鳞片和灰白色針状长毛。叶簇生，柄长約 20 厘米，粗約 2 毫米，淡禾稈色，通体疏被針状长毛，基部有一二鳞片。叶片长 26—30 厘米，寬 12—14 厘米，狭长圓形，基部不变狭，漸尖头，一回羽状；側生分离羽片 4—6 对，对生，几无柄，开展，基部一对不变小，相距約 3 厘米，长 7—8 厘米，寬約 2 厘米，闊披針形，漸尖头，基部圓形，全緣或多少呈波状起伏；頂生羽片特大，漸尖头，基部下延，羽裂，基部裂片与側生羽片同形。羽軸两面均隆起，并有針状毛（下面較稀疏），側脉明显，斜上，几直达叶边，相距 5 毫米，中間叶脉为网状，网眼 2 排，近四方形，

无內藏小脉，沿羽軸两側的側脉間有1长方形网眼，也无內藏小脉。叶为粗紙質，干后草綠色，下面沿叶脉有針状刚毛，上面光滑或仅叶脉略有一二短毛疏生。孢子囊沿网脉疏生。

特产于浙江南部（平阳，南雁蕩山）和福建北部（崇安，武夷山）。生山谷阴湿处或林下，海拔250米。

本种形体頗近圣蕨（*Dictyocline griffithii*），但較細瘦，有側生羽裂的羽片4—6对，小而狹，上面几光滑，下面沿羽軸仅有少数較长針状毛疏生，叶片干后为草綠色，故易区别。

***Dictyocline mingchegensis*** Ching, sp. nov.

*Dictyocline griffithii* var. *tenuissima* Ching, Bull. Fan Mem. Inst. Biol. I (1930) 146, f. 1.

Species habitu et configuratione *D. griffithii* Moore arcte affinis, a qua differt tota planta multo graciliore, in statu sicco colore viridescenti; pinnis lateralibus liberis usque ad 6-jugis, minoribus, integris vel interdum undulatis, supra glabris, subtus ad costas solum pilis longioribus sparse conspersis.

Endemic in the mountains in the southern part of Chekiang on the border of Fukien. **S. Chekiang:** Nan-yee-tung, *K. K. Tsoong* (鍾观光) (type); **N. Fukien:** Chung-an Hsien, *P. S. Chiu* (裘佩熹) *1948*, in ravine under forest, 13, VII, 1958; without locality, *N. S. Chow* (周楠生) *528*.

3. ***Dictyocline wilfordii*** (Hook.) J. Sm. Hist. Fil. (1875) 149. **羽裂圣蕨**

Basionym: *Hemionitis wilfordii* Hook. Fil. Exot. (1859) t. 93.

Synonym: *Hemionitis griffithii* var. *wilfordii* Bak. in Hook. et Bak. Syn. Fil. (1867) 399.

本种广布于我国台湾、福建、浙江南部、广东、湖南、广西、四川西部及云南西南部；也产日本及越南北部。

This distinct species has in the past always been treated as a variety of *D. griffithii* Moore. Copeland[22] seems to recognize it as different from the pinnate-leaved *D. griffithii* Moore by saying, "the broader, usually pinnatifid form is *D. wilfordii* (Hook.) J. Sm. The two seem distinct to me, but have not usually been so regarded". Besides, another important difference from *D. griffithii* Moore is its more complicated type of venation, often with one simple or forked included veinlet in each areola.

**4. 戟叶圣蕨** 新种

植株高30—40厘米。根状茎短而斜升，疏被褐棕色綫状披針形鱗片，鱗片边緣有长睫毛。叶簇生，柄长15—30厘米，粗約1.5毫米，纖細，基部略有鱗片或通常无鱗片，通体密被棕色短刚毛，不具針状长毛。叶片长达17厘米，基部寬11—13厘米，长圓形，短漸尖头，不分裂，基部戟形，深心脏形，两側耳状突出，全緣或上边有时呈深波状。主脉两面均隆起，側脉明显，斜展，相距7—10毫米，中間有8—10条明显的纵脉，分隔成长方形的大网眼，大都有內藏的单一或分叉小脉，沿主脉两側的側脉之間有1长方形网眼，內藏許多小脉（有时形成許多小方网眼）。叶为粗紙質，干后褐色，上面沿主脉密被短柔毛，叶面上伏生短毛，下面沿主脉和側脉有短柔毛密生，沿网脉略有疏柔毛。孢子囊沿网脉散生，肉桂

22) Genera Filicum 145 (1947).

色，近頂部有 2—3 根直立針状毛。

特产于广东中部（罗浮山）及西北部（乐昌）、广西北部（龙胜林区）和东部（瑶山）以及西北部（凌乐）、湖南南部（江华）。生原始常綠林下，海拔 480—650 米。常見。

本种为本属最突出的一种，单叶，戟形，側脉間另有明显的緃隔脉，网眼內有內藏小脉，尤以主脉两側的网眼內最多，遍体不被針状长毛，而仅有短柔毛。

***Dictyocline sagittifolia*** Ching, sp. nov.

Species habitu *D. wilfordii* J. Sm. aliquantum affinis, a qua differt statu minore, lamina simplici, ambitu oblongo-ovata vel oblongo-lanceolata, acuminata, basi profunde hastato-cordata, margine integra vel superne saepe plus minusve undulata vel grosse serrata, areolae venarum utroque costae latere venulis furcatis inclusis numerosis crebrius praedita, pagina frondis utrinque tantum breve puberula, pilis longis setiformibus destituta.

**Kwangtung:** Lochong, Lau-foh Shan, *C. L. Tso* (左景烈) *20932* (type), 2, VI, 1929; Yanfa Hsien, *S. P. Ko* (郭素白) *39190*, 23, VII, 1930; Wai-Je Hsien, *Y. K. Liu* (刘英光) *02703*, 26, X, 1958; Ingtak Hsien, *S. H. Hsu* (徐祥浩) *00665*. **Kwangsi:** Yao Shan, Ping-Nam Hsien, *C. Wang* (黃志) *39190*, 20, V, 1935, under dense forest; Lung-sun Hsien, *Kwang-foh Forest Survey 00533*, 11, VI, 1955, in wooded moist ravine; *Kwangsi Plant Ecological Survey 1015*, 29, V, 1935; Lin-Yün Hsien, *A. N. Steward 254*. **Hunan:** I-Zhang Hsien, *L. H. Liu* (刘林翰) *1269*, 21, IX, 1957, by shaded stream side; *P. S. Tuan* (譚沛祥) *63796*, 27, VII, 1959. **Kweichow:** without locality, *S. W. Tang* (邓世緯) *5129*; Lai Kung Shan, *Kweichow Bot. Exped. 2369*, 17, VI, 1949.

A pretty fern with sagittate leaves.